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REVIEWS

Bleak House. By Charles Dickens. With Illustrations by H. K. Browne. Bradbury & Evans.

THIS novel shows progress on the part of its writer in more ways than one,—and thus merits close attention now that it is completed. Ready sympathy has not been denied to it during its progress,—for in the Preface Mr. Dickens announces his belief "that he has never had so many readers as in 'Bleak House.'"

There is progress in art to be praised in this book,—and there is progress in exaggeration to be deprecated. At its commencement the impression made is strange. Were its opening pages in anywise accepted as representing the world we live in, the reader might be excused for feeling as though he belonged to some orb where eccentrics, Bedlamites, ill-directed and disproportioned people were the only inhabitants. Esther Summerson, the narrator, is, in her surpassingly sweet way, little less like ordinary persons than are Krook and Skimpole. Her own story was of itself sadly romantic enough—the provident beneficence of Mr. Jarndyce to her was sufficiently unlike Fortune's usual dealings with those born as she was—to have sufficed for the marvels of one number. But on her mysterious summons to town to join the delightful wards in Chancery with whom she makes an instant and cordial friendship, she is thrown, on the very moment of arrival, into company with a sharp-witted and coxcombical limb of the law, in Guppy,—with an overweening philanthropist, who lets everything at home go to rack and ruin for the sake of her foreign mission, in Mrs. Jellyby,—with an infuriated madman who has a mysterious lodger and a demoniacal cat, in Krook,—and with a ruefully fantastic Chancery victim in poor little Miss Flite. Nay, when she gets to the house of her guardian, he, too, must needs be marked out as a curiosity by his whimsical manner of wreaking his vexation at sin, sorrow and meanness, on the weather,—while his guest happens to be none other than such a rare specimen of the man of imagination as Mr. Harold Skimpole.—Here is "the apple-pie made of quinces" with a vengeance, if there ever was such a thing!—Granting the simple heroine of Mr. Dickens to possess the immediate power of the daguerreotype in noting at once the minutest singularities of so many exceptional people—granting her, further, in its fullest extent, the instantaneous influence for good in word and in deed which she exercises over every person with whom she is brought into contact,—it surely befalls few such angels of experience, simplicity and overflowing kindness to enter Life through the gate of usefulness down a highway lined with figures so strange as the above. The excuse of Esther's creator, we suppose, lies in the supposed necessity of catching his public at the outset, by exhibiting a rare set of figures in readiness for the coming harlequinade. But in 'Bleak House' they stand in one another's way; and seeing that, as the narrative advances, they are reinforced by such a cast-iron *Lady Bountiful* as Mrs. Pardiggle, with her terrible children—such a horrible *Darby* and *Joan* as the two old Smallweeds,—such a greasy, preaching *Mawworm* as Mr. Chadband—such a *Boanerges* as Mr. Boythorn—such an uxorious admirer of his wife's two former husbands as Mr. Bayoam Badger,—we must protest against the composition of the company, not merely on the ground of the improbability of such an assemblage, but from the sense of fatigue which the manœuvres of such singular people cannot fail to cause.

This resolution to startle, besides being bad in itself, leads the novelist, even though he have of the richest *cornucopia* of humours at his disposal, into two faults,—both of which may be seriously objected against 'Bleak House.' First, from noticing mere peculiarities, he is beguiled into a cruel consideration of physical defects,—from the unnatural workings of the mind, the step to the painful agonies of the body is a short one. The hideous palsy of Grandfather Smallweed, and the chattering idiocy of his wife, belong to the coarse devices which are losing their hold on the popular taste even at the minor theatres.—The death of Krook—attacked as an impossible catastrophe, and defended by our novelist on medical testimony—would be false and repugnant in point of Art, even if it were scientifically true. We would not willingly look into fiction for the phenomena of *elephantiasis*, or for the hopeless writhings of those who suffer and perish annually in the slow sharp pains of cancer. Again,—in his determination to exhibit snub minds and pimpled tempers, principles that squint, and motives that walk on club-feet (analogous to the mis-shapen figures which ought not to come too frequently even from the professed caricaturist's pencil)—it is difficult, perhaps, for the novelist to avoid touching on another forbidden ground, to abstain from that sharpness of individual portraiture which shall make certain of his *dramatis personæ* recognizable as reproductions of living people. This is not a remark, like our former one, to be substantiated by instances; we will not spread a sore under pretence of exhibiting it.—But the charge has been laid so widely and so universally against 'Bleak House,' that it cannot be wholly ignored by any faithful analyst. We will assume that Mr. Dickens may not have desired to inflict personal pain on any one—friend or foe. We will concede that the motion of the hand which sketched in this or the other known person in 'Bleak House' may, in the first instance, have been involuntary.—The more need is there of strong, grave, friendly protest against devices of style and manner which may lead kindly-natured men so much further than they would care to go.

Thus much recorded as regards the progress in exaggerations which we conceive 'Bleak House' to exhibit,—we now turn to the admirable things which this last tale by Mr. Dickens contains.—And first, though he has been thereby led away from his great Chancery case further than may have been his original intention, we must signalize the whole machinery by which Lady Dedlock's private history is gradually brought to day—as admirable in point of fictitious construction,—an important advance on anything that we recollect in our author's previous works. Not a point is missed,—not a person left without part or share in the gradual disclosure—not a pin dropped that is not to be picked up for help or for harm to somebody. The great catastrophe is, after all, determined as much by the distant jealousy of Mrs. Snagsby, the fretful law-stationer's wife, as by the more intimate vengeance of the discarded lady's maid. Capital, too,—of an excellence which no contemporary could reach,—is the manner in which Mr. Bucket the detective officer is worked into the very centre and core of the mystery, until we become almost agreed with Sir Leicester Dedlock in looking on him as a superior being in right of his cool resource and wondrous knowledge. Nor has Mr. Dickens wrought up any scene more highly and less melo-dramatically than those of the night-ride into the country in which the over-perfect Esther is included—and of the despairing affectionate, hopeless expectation of the deserted husband in the town-house. It is curious, however, to observe how completely our novelist's power has failed him on the threshold of the dank grave-yard, where the proud and desperate lady lies down to die of remorse and shame,—how despotically he has chosen to forget that such a catastrophe could not really have been hushed up in the manner hinted at in his closing chapters. We are not sorry to be spared a second inquest over the body of the faithless woman, having assisted at like rites over the corpse of the outcast lover of her youth,—we can dispense with the excitement of the trial of Mademoiselle Hortense, the murderess, and the horrors of her execution,—but such events there must have been;—and to have overlooked them so completely as Mr. Dickens has done in winding up his story, is an arbitrary exercise of his art, made all the more striking by the minute painting with which other parts of the narrative are wrought.

In his own particular walk—apart from the exaggerations complained of, and the personalities against which many have protested—Mr. Dickens has rarely, if ever, been happier than in 'Bleak House.' Poor miserable Mr. Jellyby, with all hope, life, and energy washed out of him by the flow of his wife's incessant zeal—the dancing-school in which the African missionary's daughter finds her mission—the cousins who cluster round Sir Leicester Dedlock, giving an air of habitation to the great house, by filling up its empty corners,—could have been hit off by no one else so well. Then, with all his inanity, pomposity, and prejudice in favour of his order, the Lincolnshire baronet is a true gentleman:—we are not only told this, we are made to feel it. His wife is a comparative failure: a second edition of *Mrs. Dombey*,—with somewhat of real stateliness superadded. Trooper George is new:—and here, again, Mr. Dickens is masterly, in preserving (though with some exaggeration) the simplicity, sentimentality, and credulity of the original nature which made the man a roamer,—and which have a strong and real life in many a barrack and in many a ship of war. Mr. Snagsby "puts too fine a point" on his intimations concerning the spectre that destroys his home peace, somewhat too ceaselessly. The queerest catch-word may be used too mercilessly, even for a farce,—much more for a novel.—Perhaps among all the waifs and strays, the beggars and the outcasts, in behalf of whose humanity our author has again and again appealed to a world too apt to forget their existence, he has never produced anything more rueful, more pitiable, more complete than poor Jo. The dying scene, with its terrible morals and impetuous protest, Mr. Dickens has nowhere in all his works excelled. The book would live on the strength alone of that one sketch from the swarming life around us. Mr. Bucket is a jewel among detectives:—and the mixture of professional enjoyment and manly, delicate consideration in his great scene with Sir Leicester Dedlock, is marked and carried through with a master's hand. Esther is, as we have hinted, too precociously good, too perpetually self-present, and too helpful to every one around her to carry a sense of reality:—nor are her virtues made more probable by the fact that she is the chronicler of her own perfection,—though with disclaimers manifold. She does not, it is true, profess less profession than did *Harriet Byron* before her:—yet *Harriet Byron*, as the centre of a galaxy of admiring relations, loving neighbours, and revering domestics, is a "being of the mind" as clear and as complete as most other fictitious gentlewomen of our acquaintance.

It may be thought, that in the above attempt to sum up the merits and defects of this unequal tale, more account should have been made of what may be called its main argument, the great Chancery suit. But of that we spoke when announcing the publication of its opening number [*Athen.* No. 1271],—and those who, with us, then anticipated scenes which might rival the Pickwick trial, or combinations such as should keep that mighty mystery of Iniquity and Equity perpetually before the reader, must have been disappointed,—since at an early period the fortunes of Richard and Ada pass into the place of second interests, while the first concern and sympathy are given to Lady Dedlock's secret: so that the matter has not the importance which Mr. Dickens could have given it, had it pleased him so to do. The statements made in his Preface, by way of justification, will make many regret that he should have been fascinated away from his master-purpose, even by such a tempting "passage of arms," as the silent strife betwixt the haughty woman of fashion and the deep, astute, and ruthless arbiter of her destiny, "the old man, Tulkinghorn."

Sea Nile, the Desert, and Nigritia: Travels in Company with Capt. Peel, R.N. 1851-52. Described by Joseph H. Churi. With Thirteen Arabic Songs, as sung by the Egyptian Sailors on the Nile. Published by the Author.

Here at least is a literary novelty. The Nile and the Desert, the City of the East, the mosque, the cataract and the pyramid, are known to us by a thousand interpretations:—but how few of these are native! The German student has carried with him to Philœ the scholarship and mysticism of Heidelberg,—the French novelist has reproduced at Cairo and Alexandria the gaieties of his own boulevard,—the American Howadji, unconscious of the poetry of his own lakes and mountains, of the interest attaching to the past greatness and forgotten civilizations which exist around him, has placed his amaranth on gilded minaret and solemn pyramid,—the English tourist has been poetical, learned, indifferent, sneering, and statistical, as agreed with his digestion or chimed in with the prevailing mood of his mind:—but a picture of the East by an Eastern is a rare effort, and will command attention.

Signor Churi is a Maronite "of Mount Lebanon." What an address to give:—Signor Churi of Mount Lebanon! In a free and pleasing Preface our author takes the reader into his friendly confidence:—"You must know, gentle reader," he says, "that I am a Maronite of Mount Lebanon, and at the age of fourteen I was sent to the College of Propaganda in Rome, to be educated in virtue and doctrine for the ecclesiastical state." He remained there seven years,—and then left Rome on account of sickness. His simple story is continued as follows.—

"I was unwilling to return home for several reasons, and I determined to come to England to try and teach Oriental languages, such as Hebrew, Syriac, and Arabic, and also Latin and Italian. I came from Malta to Marseilles, and to Paris, where I arrived without any letters of recommendation; and thence got to London. * * I hardly arrived in London when I met with virtuous and charitable persons who took great interest in me, especially Mr. D. Braggiotti, and Mr. P. Hava, my countryman, who is of an ancient and distinguished Maronite family, highly respected for its learning and extreme charity. Two months after I began to give lessons in Arabic and Latin, and shortly after in Italian and Hebrew. Amongst my Arabic scholars was Capt. W. Peel, R.N., who, by daily lessons for three months, made great progress. In September, 1850, he proposed to take me with him to Egypt as his teacher in Arabic, and to go up the Nile to Uadi Halfe, to Suez, Mount Sinai, Arabia, Jerusalem, Nazareth, and Syria. I had some difficulty in consenting to this project, as I was unwilling to break off the lessons I was giving to other pupils; but finally I promised to go with him, and we left Southampton on the 20th of October, 1850, and after a prosperous journey through the places above named, we returned on the 20th of February, 1851. * * On my return I got back my scholars, and even fresh ones, and I thought no more of travelling. In the month of June, Capt. Peel proposed another most interesting journey—to the centre of Africa from Cairo, to Darfour, Bargu, Barnu, and to the Niger, towards the Cape of Good Hope. After a long delay I consented, and we left England on the 20th of August, 1851, by the steamer Pottinger. The passengers knew nought of our destination, though they all tried to find it out. On our arrival at Cairo we hired a boat, and went up the Nile to Corosco, in Nubia; and then we crossed the Desert, suffering intensely from the heat. We passed through Nubia, and got to Kartum, the capital of a province of Upper Nubia and of Sudan. Here we crossed the White Nile, and went to Lobaied, the capital of the eastern part of Cordofan, where we hoped to penetrate into Darfour; but our hopes were vain, and our firm resolution and courage were broken through by sickness. After having suffered from twenty-five days of intermittent fever, we were obliged to turn back *ad pellem salvandam.*"

The journey projected by Capt. Peel, of which Signor Churi, his interpreter, has here written the detailed narrative, has been made the subject of much animadversion:—we think with little reason. No doubt, the attempt to cross the continent of Africa was one full of peril: but so is every other journey into unknown regions. It is a question of zeal, courage, and devotion. If these great qualities be present, and chance to be sustained by health, knowledge, and resources, it is an honour for their possessor to attempt great enterprises; and if the object be to extend the area of science and carry the blessings of civilization into the darker corners of the earth, there is glory even in failure. Capt. Peel's journey appears to have been cautiously as well as courageously undertaken; and its termination at Lobaied, instead of at the southern shores of the continent, was an event for which he is not to blame. The account of the journey here given by his travelling companion Signor Churi is one to add lustre to the great name which he bears and laurels to the repute which he has already won for himself in the public service.

After so much of general remark, we will treat our readers to a few extracts from this Oriental record of Oriental travel. The mixture of fact and fancy, earnestness and simplicity, in the following passage strikes us as singularly eastern.—

"I perceived noon was past, and the Arabs were ready to set off, they came for our carpets to spread them on the dromedaries, so we mounted and set forth at a quarter before one, when the heat was in great force. 'What a heat,' I exclaimed, drawing out of my pocket the thermometer, which was at 105°. I held it in my hands for a couple of minutes, and found it rose to 116. I then opened the umbrella, and keeping the thermometer under its shade for two minutes found it lessened by two degrees, from what it would have been had I kept it till the umbrella was heated; the heat was intense, and we were almost suffocated by the South wind, which blew direct against our course, being in that direction. Such a wind forms an amusing game for a spectator at a distance; blowing so strongly it scoops up the finest sand, and forms it into high columns, which dance about for the amusement of the mountains. The dance was executed with so much art and delicacy, that nothing was wanting but a lady to accompany on the piano the dancing sandy columns. I said to the captain, 'I am sure, the English ladies could not dance with such skill had they learnt for ten years.' According to Oriental usage, I carried an inkstand of bronze fastened to my side, in which was ink and pens, that I used for noting in my journal the events of the day. The little box, which contained the ink, was closed and fastened in the middle by a covering of brass, in order that the ink might not soil the vest of him who carried it. Wishing to note in my book the momentum of these dancing columns of sand, I took the case and found the ink had escaped from the box in spite of being corked, and was frothing all over it exactly as if boiled in a pan. This may appear incredible; but my pen, as before stated, only writes the truth. Nor was it only on this day; but on the following days the same thing happened. My companion is witness of it, for I several times showed him the same effect produced by the excessive heat. Our watches were well heated and went as they pleased. In less than twenty-four hours my watch showed a difference of two hours and forty minutes. We went on quiet and humbled, beaten down by the excessive heat. Our faces were red, like boiled lobsters, our minds overshadowed by black images, our liberty imprisoned, our will dead. We had lost the desire for anything, even the two necessary desires of talking and food. The Arabs also suffered in mind and body. I was immersed in profound melancholy and bitter sadness. Believing firmly that I should never return from this journey, I began to bid adieu to the languages I had taught for a long time, to the music, which solaced me in sad circumstances. 'Ah,' said I, 'what a fool I was to come and expose myself to such a fate! I was so well in London! Every day I made new acquaintances, ladies and gentlemen, who desired to learn the Oriental languages, Latin, or Italian.'"

Here is a note on Arab salutations, which puts one of the incidents of Eastern travel vividly before the reader.—

"When the Arabs meet with each other, the first thing is the salute, which is repeated for several times, and is done in the following manner:—each strikes the palm of his right hand on that of his companion, or throws it on his left shoulder, repeating always the same phrase:—'Salamat, Caif Halcom taibin' (peace, how are you, well?) This way of saluting is most beautiful and striking, and when performed, gives a new figure and majesty to the naked Arabs who are the performers of it. Those gesticulations are always accompanied with a very grave tone of voice, which invests them with so noble a character, that the traveller does not think his Arabs so rude as he thought them before, but would suppose them just arrived from the first school of etiquette. After the salutation, they inquire of each other the news about the places from whence they came. Their news relates generally to the buying of camels and dromedaries; whether there are loads to carry, or something of this kind. They then ask each other for tobacco or salt, and their conclusion is—'Salute me Hamed at Corosco; and you Ali at Barbar; do you understand? In peace, in peace.' After this each resumes his way."

Of course, every pilgrim in the Desert must have his little adventure with a serpent,—and as the reptile is no respecter of men or Maronites, Signor Churi came in for his share of this sort of excitement.—

"I went down to the Nile, and took with me a dried gourd which I had bought at Abuhamed; it was intended to hold butter or water. The moon was full, but the South wind was like fire, as I proceeded to the bank, I could not find an easy descent to the water; I went a little to the right, but hardly had I divided one bush, and put my foot, as I thought, on another, than I was struck with a horrible force. '*Gesu mio,*' I cried, as I heard with terror and surprise, the hissing and crackling of a serpent. My blood froze. I remained speechless, like a stone, for some instants, but recovering myself, I drew back. I could not perceive the serpent amongst the thick grass, but from a blow I had received, and the noise it made in going off, I am sure it must have been immense. After this misadventure, I went back and found a place opened by the inhabitants. I descended, drank, filled the gourd, and mounted the first step. Having the gourd in my hand, I put my foot on the second step—it slipt—I turned back, passed the

first step, when down went my left leg into the water; having my right foot on the ground, I attempted to arise, and at the second struggle drew out my leg, supporting myself on my right foot; but this step also gave way, and, in fear, I threw down the gourd, which broke into a thousand pieces; and catching hold of some bushes, gently climbed up and got safe. I stood still a moment to look around, and then exclaimed, 'Che Diamine!' one misfortune follows another. God be thanked that the serpent did not fasten on to my foot, and that I was not a victim to the Nile.'"

From beginning to end of this record of travel we are conscious of seeing the East through strange optics. There are warmth, fervour, simplicity, lassitude on every page. We seem to feel the hot wind, to share the burning thirst, to long for the cold wells:—altogether, the work appears surrounded by an air of reality, and to reproduce the scene with its native colours. The satirist who has specially ridiculed the stories of African travel would scarcely have ventured to invent such a story as that of the wandering minstrel spoken of in the following notes.—

"This Mufdi, named Mahmud Debadi was then a student, and was going to Barnu, after his Shiek, teacher of the Mohammedan laws. He had nothing with him but his dress, a holy Koran, and an Arabic manuscript, containing many pieces from the most beautiful Arabian poets. When he arrived at Darfour and at Facier (this is the capital residence of the Sultan of that realm), he was detained for some days, and made acquainted with his fate, which was that he was to be killed, because the Sultan supposed him to be a spy of the Turks. He said to the Sultan, 'I am not a spy, but am going in search of learning, and if you kill me, I shall be a martyr—(there is an article of faith amongst the Mohammedans, that if one goes to visit Mecca, the tomb of some Uali (saint), or to study the holy language of the Koran or the Mussulman law, and is killed, he goes to heaven immediately). After this he used to go through Facier, declaiming pieces of poetry, or some chapter of the Koran, by memory. The general language of Africa is the Arabic, and the people and court of these Sultans write all their letters and documents in it, and they must know it to understand the Koran. The first Wezir of Darfour happened to hear him declaiming a piece of Hariri (the finest Arabian poet), whom he was fond of, and he was so much struck and delighted with Mahmud, that he dissuaded the Sultan from killing him, and obtained leave to let him continue his journey to Bargu. The Sultan was pleased to give him a firman to all his subjects, to afford him every possible hospitality, and means to arrive at Bargu. He proceeded on his journey, and reached Bargu in safety; but there he met with worse difficulties than he did at Darfour. He was not disheartened, and wrote a polite letter to the first Wezir, entreating him to spare him his life, and let him go to Barnu after his master. The Wezir was very much pleased and flattered by the harmonious and pompous Arabic words which the letter was composed of, and became his protector and friend. He then introduced him to the Sultan, and painted him in such bright colours, that the Sultan himself did not hesitate to call him his friend, and bestow on him the dignity of Wezir. He remained there for about fourteen months, and requested permission from the Sultan to go to Barnu; but he refused him. The Sultan died after a short time, and Mahmud was one of the victims who were to be killed a few days after (it is the custom at Bargu to kill all the Wezirs after the death of the Sultan, because the new Sultan must have a new Wezir chosen by himself.) He knew well how to plead for himself, and succeeded in persuading the new Sultan to let him go to Barnu. So he was rewarded by the Sultan with many slaves of both sexes, camels and dromedaries, to sell, and set off on his journey to Barnu, where he found the people and court more humane and civilized than at Darfour and Bargu—(in these two kingdoms the white faces are taken for devils). He soon gained the friendship of the first Wezir, the Sultan, and of the whole court. He remained there for about eighteen months well honoured. Afterwards he went to the Western island of Africa and to Tunis, from whence he returned to Alexandria and to Cairo, after an absence of about three years. After staying there a time he was appointed Mufdi of a province of Upper Egypt, and in two years he was sent as Mufdi to Lobaied and Cordofan, where we met him, and got this information from him. He gave us a letter of recommendation to the Wezir of Barnu, with whom he still kept a correspondence, and in order to assure him that it was not a forgery (these people being very suspicious), he wrote it on the sheet which contained a private letter of friendship of the Wezir."

We cannot close this record of a perilous journey without recommending the lovers of that odd compound of simplicity and shrewdness, endurance and plasticity, which lies at the root of nearly all Oriental character to make further acquaintance with the 'Sea Nile, the Desert, and Nigritia.'

The Morning-Land; or, a Thousand and One Days in the East. By Friedrich Bodenstedt. Second Series. From the German, by Richard Waddington. 2 vols. Bentley.

As a learned man of letters, Dr. Bodenstedt is certainly just now one of the foremost of his class in Germany; but he seems to be in some danger of outrunning his credit, by drawing on public favour with more frequency than is quite consistent with the amount of his real effects. His translation of Lermontoff, the Russian poet, which we commended [*Athen.* No. 1343], is but one among his recent productions.—An original narrative poem ('Ada, the Lesghian Maiden,') in sixty-eight cantos, published in the current year (1853), is now before us:—a 'New Epic' of his, probably from the same Oriental source, has been announced as in the press:—and a drama, entitled 'Prince Herrmann,' for the Berlin stage, is also said to be on the eve of appearing. To these literary tasks must now be added the duties of Professor of Oriental Literature in the University of Göttingen, which he has accepted in the present year:—while, until lately, he was employed as editor of the '*Weser Zeitung*':—to say nothing of occasional contributions to the '*Morgenblatt*,' and possibly to other journals. It is evident that with such occupations he must have been busy enough of late years for any good purpose; if not too much so for the perfect discharge of each. But we are not yet at the end of his labours:—the work here introduced by Mr. Waddington, a sequel to the 'Thousand and One Days,' published a few years since [see *Athen.* No. 1243], has been lately produced, on the strength of the favour with which the first series was received. An activity so unresting hardly consists with equal justice to all that it undertakes. It is, accordingly, no surprise to find in this second part of 'The Morning-Land,' amidst traces of hasty compilation, the gleanings of a field already well harvested, instead of the produce of newer ground. It must indeed, on the whole, be described as a piece of book-making;—compiled, in a great measure, of notes that were probably excluded from the first volumes, and eked out by supplements which have no particular right to admission now. Of such, the most conspicuous is the translation of an entire Russian opera by Sagozkin, filling more than half of the second volume in the English edition,—a piece which has nothing to recommend it, in the re-translation, at least; while it has no connexion with the Doctor's sojourn in "the Morning-Land," but dates, he says, "from the time of his residence in Moscow,"—we suppose, before he became an Eastern traveller.

As to that portion of the work which fulfils the promise of its title,—the prose sketches, taken from the frontier of the Caucasus, or from the Georgian region, are of the same kind, but not quite so good of their kind as those in the first part of 'The Morning-Land.' The poems, with the exception of some Circassian lays, are mostly taken from the lips or papers of the Anacreontic "Wise Man of Gjändsha,"—Mirza Shaffy, of whom much was said, to the high satisfaction, it appears, of the German public, in the first part of 'The Morning-Land.' To us, the delight imparted by the Wise Man, through the medium of Mr. Waddington's translation, was then, and now is, by no means considerable: a circumstance natural in any case, where foreign—especially Oriental—poetry has to bear the straining of a second, if not a third, version, even through the most dexterous hands. Mr. Waddington's, moreover, are not the most apt for this difficult process; indeed, he has not yet acquired the art of turning the plain German prose into correct or elegant English. His deficiencies in this respect were pointed out in the former notice;—and that he has not improved since then, the following specimens, taken from the first half only of one volume, will show.—"*Regular* walls of medlar bushes and box trees *press forward even* to the sea." (p. 2). "Affairs of service" (p. 9) for *military business*. "This peculiar expression *stands neither alone nor accidental there*, it corresponds with a method of conception quite as peculiar to the Russians of knowledge in general." (p. 16). "I seized in *drunken sleepiness* on my pistol" (p. 41),—(*Schlaftrunken*, giddy or confused with sleep, not *sleepy with drink*). "A personality grandly wrought by nature." (p. 104). "Let us now in unrestrained discourse" (p. 169), is a stranger case of misunderstanding. The Doctor has been giving his version of some Circassian songs, as characteristic of the people; and then proceeds (having finished his *poetical* illustrations):—"Let us now, in *plain prose*, (*ungebundener Rede*) endeavour to complete the information," &c.—This "*plain prose*" is translated "*unrestrained discourse*" by Mr. Waddington.

From him, accordingly, little can be expected in the more arduous poetic department; which, from what is already known of Dr. Bodenstedt as a translator, may be supposed to constitute the charm of his work in its original state. The songs he owes (or imputes) to the amorous and jovial Mirza;—the rugged lays which he obtained (through a Turkish medium, however,) from the popular poetry of the Caucasus, if spirited and characteristic in German, have lost their respective qualities in passing through Mr. Waddington's inkstand,—and fill without embellishing the pages of his copy-book. These, accordingly, it will be as well to leave there:—an incident from the prose of Georgian life, in one of its delicate relations, will better bear removal. The supply of virgins from Colchis to Constantinople, says the Doctor, has been cut off by the Russian occupation of Georgia; but—

"from the provinces on the eastern coast, and especially from Guria, a multitude of pretty maidens are still secretly conveyed across to Anatolia, where, at the market of Trebizond, they either at once find lovers and purchasers, or else a safe opportunity of further progress to Stamboul, the last and highest object of their wishes. From Poti, or St. Nicholas, the nearest places on the coast to Trebizond, is only a trifling distance for skilful rowers; a single night suffices, on the light beak-pointed kajiks of the Greek coasters, or even on the little barkasses of the Cossacks, to run through the short expanse of sea. And of pretty maidens, ready and willing for the adventurous passage, there is never any deficiency. * * My host in Ossurgethi had two daughters, the elder of whom was named Nino, and the second, if I mistake not, Thamar. Both, although in form and feature essentially different, were so graceful a pair of creatures, that they might have vied in beauty with the stateliest daughters of the Adighe. Nino, a tall, slender, cypress-like figure, with delicate hands

and feet, small mouth and ears, and adorned with a dark growth of hair, luxuriant and long enough to entangle in its glossy wreaths a dozen inexperienced men at once. She was a woman born for dominion. In her large, black eyes, delicate, close-pressing lips, and slightly arched, boldly-delineated nose, there lay a decidedly masculine expression. In women of this order, love always plays only a subordinate part. Thamar, the younger sister, had not so strikingly beautiful a form as Nino; she was smaller, fuller in shape, and less regular in her features; but irresistibly charming and feminine in her whole appearance. The somewhat too large mouth was compensated for by the rosy lips and the healthy, snow-white teeth, with their soft enamel. The colour of her countenance, of her full throat and neck, was of transparent clearness. She had, what one so seldom finds united, heaven-blue eyes, with long dark-silken eyelashes, and shining black hair. * * My supply of cash was getting exhausted; so that, above all things, I had to think of reaching Odessa as soon as possible, in order to negociate with Herr Consul Bellino an exchange in gold; for throughout the entire woods of Colchis, not a soul perhaps could have given me, for a bill of two hundred ducats, so much as two hundred kopeks. And a pecuniary embarrassment, in uncivilized provinces of a foreign part of the world, is not to be reckoned among the slightest embarrassments of life. * * I had commissioned Giorgi to find a purchaser for my riding-horse, a splendid animal, presented to me by Prince Andronikov. It was hard to bring myself to part with the faithful beast, and I would rather have taken him with me as a memorial to Europe, had not the transport been connected with insurmountable difficulties. At that time there was no regular communication on the Black Sea; in the most fortunate case, I should have been able to convey the horse on a Russian war-boat to the Crimea, and thence by Odessa to Constantinople. But gladly as I would have borne all the expenses attending this procedure, in the certainty that my steed would have arrived in good condition at the place of his destination, as little could I, under the existing circumstances, determine on so doing. * * On the evening of the self-same day on which I had commissioned Giorgi to look about for a purchaser, the cunning Armenian came into the room, where I lay on my carpet sunk in a reverie, and said, 'Aga, I have found my man, and Insh Allah! (please God!) you will be satisfied with the purchase-price.' —'Who is the purchaser?' I inquired. 'Our kunak' (host), answered Giorgi.—'Dolu!' (stupid fellow!) I cried, and angrily drew my hand across my forehead; for a more disagreeable purchaser than our host, Giorgi could not possibly have brought me. According to Asiatic usage, I should be obliged to make him a present of the horse out and out, or, at all events, to make it over to him for a mere trifle. Giorgi endeavoured to pacify me. Why, he had thought of anything but bargaining to my disadvantage. In this country, where the people themselves had so little to give, and strangers were as rare as money, the habit of making presents was not so much indulged in, and the old 'Bu begjanerem!' (this pleases me,) and 'Alssen!' (take it then,) were not quite so frequent. 'What will the kunak give, then, for the horse?' I interrupted Giorgi. His face relaxed to a triumphing smile, as he fixed his sly look on me, answered, 'Nino!'—'Fellow, what the deuce do you mean?' I hotly rejoined. He did not, however, allow himself to be put out of countenance. With the expression in his face continually brightening, as if with certain victory, he proceeded: 'Do you think I have struck the bargain, then, Aga? Am I a Kasviner who loses his ass, and thanks God that he has not lost himself? Hamdu lillah! God be praised! I am not that! I said to our host: "Friend!" said I, "for whom dost thou take my master, that thou thinkest he will give this horse away for Nino? If my master sells his horse, he must, at least, have both the maidens for him, Nino and Thamar!" Mark me, Aga, *at least* both the maidens! He has not yet agreed,' but let me no longer be an Adam (man), let me become a donkey, if you do not get both the maidens for this horse. What do you say now, Aga?' finished Giorgi, smirkingly."

To complete the story, it may be added, that Nino, having heard of the bargain proposed, and desiring to make her fortune in foreign parts, attacks the Doctor with coaxing entreaties that he will take her in exchange for the beast; hinting that he can sell her, if he likes, on reaching Trebizond or Constantinople,—where she knows that beauties of her stamp fetch good prices. But the Doctor (with a heart already engaged elsewhere) is proof against the temptation; and departs without either profit from the sale of his horse, or pleasure in the disappointed Nino's company.

After this curious passage, the account of a palaver of Circassian chiefs with Count Woronzof, and a story of one Colonel Oppermann's adventures for and with his Polish lady, are perhaps the most characteristic portions of the book. On the whole, however, it is not rich in matter that will be new to readers of the Doctor's former works on Georgia and the Caucasus.

History of England, from the Peace of Utrecht to the Peace of Versailles. By Lord Mahon. Vol. V. 1763—1774. Third Edition, revised. Murray.

We turned with some curiosity to this new and revised edition, to see how his Lordship had settled the points of difference between us respecting John Wilkes. We are happy to say, that he has dissolved the first marriage, and given a certificate in favour of the drysalter's daughter: but he still holds to the brewery business; and still maintains that Wilkes was an ungrateful fellow,—that former friendships were with him no protection,—and that even Sir Francis Dashwood, "the Abbot of Medmenham, was most unsparingly lashed as soon as he became Chancellor of the Exchequer." All this may be as set down by his Lordship:—the Index to the *North Briton* may be imperfect,—but it does happen that since our notice was published an interesting paper has appeared in 'Willis's Current Notes,' copied from a manuscript in Wilkes's handwriting, wherein is given an account of the latter's connexion with the *North Briton;* and on this very subject he wrote as follows.—

"Lord Temple was most displeased not at the *acrimony* of the *North Briton* against particulars, but at the compliments paid to some persons who were not his friends, Mr. Legge among others. There had been a long friendship between Mr. Legge and Mr. Wilkes, and their political sentiments had always agreed. Lord Temple and Mr. Pitt were never in direct open variance with Mr. Legge, but a coldness had long subsisted between them. Mr. Wilkes was very happy to have a public opportunity of doing justice to the integrity and abilities of his friend Mr. Legge, and the *North Briton* drew his character in the most advantageous manner, and set it in the fairest and fullest light. I believe this was the part of that paper which was the most disagreeable both to Lord Temple and Mr. Pitt. The common cause of the opposition made Mr. Wilkes's conduct political, but private friendship dictated the measure. *It is perhaps singular, with respect to this particular periodical paper, that it was conducted upon principles different from any other. No private tie had been broken, no connexion dissolved, nor any attack begun where there was a friendly intercourse.* Sir Francis Dashwood *will be on record a remarkable proof of this observation. He was certainly, as Chancellor of the Exchequer, the best mark an opposition could wish. His capacity did not extend to the settling a tavern bill, yet the department of finance was entrusted to him. He was spared by the* North Briton, *and it was believed he owed that indemnity to private connexions with Mr. W. which arose from their being of the same county and serving from the beginning in the same militia.*"

—There is more to the like effect, but this is enough for our purpose.

This new edition also contains a note on the Junius question, lustrous with names and fames, —Mackintosh, Macaulay, and Mahon. We ought, we suppose, in modesty to veil our eyes —to defer at once to such authorities. It is, however, a law in the literary republic that names and fames go for nothing so soon as opinions are on the record. The "black art" of our day—the printer's art—is potential to allay all illusions—and we must judge by facts and arguments, and come to our own conclusions. "'Tis our vocation,"—and our only hope is, that we may do our spiriting gently and modestly.

Sir James Mackintosh's letter may be dismissed at once:—it has been published before, and the criticism is not general, but confined to Mr. Coventry's 'Inquiry.' Mr. Macaulay's letter also relates principally to the speculations in the *Quarterly Review.*—

"There is [he says] one strong objection to the theory of the Reviewer, which strikes me at the first glance. Junius, whoever he was, wrote a long letter to George Grenville, which was preserved at Stowe many years, and of which I have seen a copy in Lord Mahon's possession. The letter contains no decisive indications of the writer's situation. But, on the whole, it seems to be written by a man not very high in rank or fortune. The tone, though not by any means abject, is that of an inferior. The author declares himself to be the writer of a squib, then famous, called 'The Grand Council.' He says, that Grenville must soon be Prime Minister. 'Till then I wish to remain concealed even from you; then I will make myself known, and explain what I wish you to do for me.' I quote from memory; but this is the substance."

We need scarcely observe, that this is a mistake,—that Mr. Macaulay's "memory" has misled him. What the writer did say was this: —"Until you are Minister, I must not permit myself to think of the honour of being known to you. When that happens, *you will not find me a needy or a troublesome dependent.*" We, however, agree with Mr. Macaulay in his conclusion, that the tone of the letter, "though not by any means abject, is that of an inferior."

Mr. Macaulay, however, takes the opportunity incidentally to avow his opinion in favour of Francis;—and he adduces certain facts in proof.—

"It is odd [he says] that the [*Quarterly*] Reviewer should infer from the mistake about Draper's half-pay that Junius could not have been in the War Office. I talked that matter over more than ten years ago, when I was Secretary-at-War, with two of the ablest and best informed gentlemen in the department; and we all three came to a conclusion the very opposite of that at which the Reviewer has arrived. Francis was chief clerk in the English War Office. Everybody who drew half-pay through that office made the declaration which Junius mentions. But Draper's half-pay was on the Irish establishment; and of him the declaration was not required. Now, to me and to those whom I consulted, it seemed the most natural thing in the world that Francis, relying on his official knowledge, and not considering that there might be a difference between the practice at Dublin and the practice at Westminster, should put that unlucky question which gave Draper so great an advantage."

Now, we may as well acknowledge at once that we cannot see the force and cogency of this reasoning:—in truth, we do not understand it. The reference to the intelligent officials at the War Office leads to the inference that such persons are better informed on this subject than the public generally. If so, it must have been equally true of intelligent War Office officials in 1769. Yet, says Lord Mahon,—"this mistake was likely to be made by some person closely connected with the War Office, *and no person besides.*" It may be so; but to us it appears, that "if everybody who drew half-pay" made the declaration which Junius mentions, then "everybody who drew half-pay" might "put the unlucky question," "not considering that there might be a difference between the practice at Dublin and the practice at Westminster." In brief, in our opinion, the conjoint arguments amount to this:

—though all England was probably as uninformed as Junius—though all who did receive, or ever had received, half-pay were open to what is considered the misleading light,—there is a mysterious something, of which we cannot get even a perception or conception, which proves that "no person besides" the one person of all others least likely to be uninformed—least likely to be misled—could have been the man who committed the error!

We come now to Lord Mahon; who has not only added to his original text, but "elucidated" his brief argument by a page or two in the Appendix. Some of the points touched on and enforced were, we think, disposed of long since by anticipation. At any rate, we cannot consent to enter again on such vexed questions as that of handwriting; but must leave his Lordship to settle differences with Mr. Almon, Mr. Coventry, Dr. Busby, Dr. Girdlestone, Mr. Cramp, Mr. Netherclift, Mr. Smith, and a dozen others, all of whom differ from him,—and from one another. Then, as to "peculiarities of spelling,—that subject is fairly exhausted. His Lordship says, both Francis and Junius spelt "endeav*or* for endeav*our*, inhance for enhance, and ris*que* for ris*k*." Why, so did half the people of the age and nation. It is little more than a month since we were reading page after page about these "peculiarities," as they are called,—but then, it was Lady Temple and Junius who wrote "endeav*or*" for "endeav*our*," and so forth.

Another buttress by which Lord Mahon endeavours to strengthen his theory is also constructed out of old materials,—the old assertion that Junius "on all occasions designedly spared" Lord Holland. Even when attacked, says Lord Mahon, as he believed, by Lord Holland's son, he did not return blow for blow, but merely "under another name" threw out a warning; and no theories as to the authorship "can be complete or satisfactory which do not supply some adequate explanation of this remarkable anomaly." Fortunately, the *Athenæum* has no theories,—and may, therefore, in justice to others, say that such conditions are hard and arbitrary. Heretofore the speculators were told by a writer in the *Edinburgh Review* that no one could be listened to who did not establish a relationship of some kind between Junius and the Grenvilles; and forthwith the same writer himself pronounced judgment in favour of Francis without saying one word showing, or tending to show, that either father or son had any, the remotest connexion, with either Stowe or Wotton. Now, Lord Mahon's preliminary condition is, friendship with or dependence on Lord Holland. To prevent even the chance of misinterpretation, we will quote his words.—

"That nobleman [Lord Holland], considering his line of politics, was one of the most obvious marks for Junius to assail. Few men of that time were more open to attack. Few men had less of popular favour to shield them. Yet by a most remarkable anomaly in Junius's career, Lord Holland was on all occasions designedly spared by that writer. In one of his private letters to Woodfall he goes so far as to say: 'I wish Lord Holland may acquit himself with honour.' And when he believed Lord Holland's son to have written against him anonymously in the newspapers, he does not strike blow for blow (as who could more readily?), but merely, under another name, throws out this public warning: 'Whether Lord Holland be invulnerable or whether Junius should be wantonly provoked, are questions worthy the *Black Boy's* (Charles Fox) consideration.'"

It is strange to observe how much is assumed in this apparently simple statement. We cannot, however, stop to analyze it at length,—though an analysis would be both amusing and instructive. That Junius did not attack Lord Holland has been asserted fifty times; but, assuming it to be true,—it is at least a question open to consideration, whether he refrained "designedly" from personal feeling and regard for the man, or, as in so many other instances, because the man had sunk out of observation. Lord Holland at that time held no responsible political position,—he had been long out of office—had no weight or influence either with King, or Minister, or Parliament, or the Country,—his political insignificance is the painful burthen of his private letters—he was in wretched health, and abroad for health's sake, the greater part of the time that Junius was before the public,—he was, as he himself said, out of public recollection, and would have remained so but for the accident about his accounts. Junius struck at living men and active antagonistic powers; and was too much in earnest to throw away powder and shot on *ex*-anybody. As to "the pert youth"—"the Black Boy,"—he was a boy in every sense of the word:—he was not twenty, and had never, so far as we know, opened his lips in Parliament when Junius was half through his labours. His first recorded speech—recorded in 12 lines—was made in 1770, according to the Parliamentary History,—and he was then just twenty. He was indeed a wondrous boy, who became afterwards the celebrated Charles James Fox,—but at that time a good-tempered, idle, gambling, red-heeled Macaroni. It would have been strange indeed if Junius had formally attacked him,—for Junius was singularly indifferent about all people out of power,—and was willing even to say a civil word of the dead. It was a gleam of light on his black portraits,—a liberality that heightened their effect—and cost nothing.

But why, if Francis were Junius, should he spare Lord Holland?—Because, says Lord Mahon, Lord Holland was "the early patron" both of father and son. This argument, it appears to us, is either of universal or of no application. Was Francis under obligations to Lord Chatham?—he said so somewhat ostentatiously, [see *Ath.* 7th Sept. 1850]. Did my Lord Mahon's Junius spare the "lunatic," the "villain"?—Was he under no obligations to "the most contemptible little pieces of machinery in the kingdom,"—Grildrig, Guy Faux, little mannikin Ellis? Had the Francis's no friendship for, no obligations to, "the vagabond" Garrick?—read the dedication to 'Eugenia.' None to the King? "the odious hypocrite," whom virtue afflicted and vice consoled—who betrayed everybody who confided in him—the one man who saved Grafton from the reproach of being the meanest and basest fellow in the kingdom. Why, the King was the very breath of their nostrils; the bread they ate came from the King,—not from the Crown, not from the Minister, but from the King personally, and from personal regard. He, the King, as we believe, gave the father a living,—and a good one.—He got, from King or from Minister—and we suspect got also leave to sell—the Chaplaincy of Chelsea Hospital. In 1762, the King gave him 600*l.* a-year for 31 years, on the Irish Pension Fund. In 1764, the King gave him 300*l.* a-year on his own Civil List. Are we, with these facts before us, to talk about Junius sparing Lord Holland and his family because Lord Holland had given young Francis a subordinate place of some fifty or a hundred pounds a-year? Further, we have no doubt that the friend of the father was the friend of the son. Young Francis was patronized by all parties,—by Fox—by Chatham—by Welbore Ellis—by Barrington:—which leads to the inference that he was patronized by some one who had influence over all. Was not that patron the King? Young Francis found friends in those who hated the father; and Chatham must have hated him, for it was the father who had turned his resignation and his flourishing letter to the Lord Mayor into verse and into ridicule. As to Welbore Ellis, and Barrington, they were creatures of the King—dependents on him. The King upheld Barrington under all changes—kept him in place under all governments,—and the King was never, either before or after, so powerful as at that moment. But, as the King, could not constitutionally appoint to the office, Barrington therefore, we doubt not, was directed to recommend young Francis for the appointment in India, and North to accept the recommendation. The irreproachable moral character of young Francis, to which allusion was subsequently made in Parliament, pleased the King; and the King, we know, was anxious to get men and keep men of character in office, and especially in India.—Yet, as Sir James Mackintosh observed, "the bitterest of all the animosities of Junius is that against King George the Third."

After all, is Lord Mahon's solitary fact a fact at all? That Junius did not attack Lord Holland, was noticed by Walpole,—who thence inferred, not that Francis, but that Gerard Hamilton was the writer. That Junius, under another signature, had warned "the Black Boy" to beware how he provoked him, for that Lord Holland and his family had been "designedly spared," was asserted forty years since by Dr. Good, when he first published the letter of "Anti-Fox" and attributed it to Junius. Mr. Taylor, of course, strengthened his case by both fact and assertion. But Lord Mahon goes further; he assumes not only that the letter of "Anti-Fox" was written by Junius, but that it is the only letter in which Junius referred either to father or son, and that it had been written under circumstances of personal provocation. Why, this is so far from being correct, that Junius, without provocation, had months before, and not under another signature but under that of Junius, not only referred to Charles Fox, but characterized him—briefly indeed, but with extreme severity. The Macaroni, young as he was, had not escaped the eye of Junius,—though his youth no doubt saved him from the honour of a special letter. If Lord Mahon will turn to the famous No. 49 — to which, we are told, Junius was so "strangely partial," and which certainly in withering scorn, vigorous satire, and something worse, was never surpassed—he will there read Junius's apology for the King's having once again admitted Grafton to his Council. There was no other man, he says, on whom the King could rely to perpetrate the new crimes contemplated.—

"Lord Mansfield shrinks from his principles;—his ideas of Government perhaps go further than your own, but his heart disgraces the theory of his understanding. *Charles Fox is yet in blossom*; and as for Mr. Wedderburne, there is something about him that even treachery cannot trust. For the present, therefore, the best of princes must have contented himself with Lord Sandwich."

—Friendly and flattering this to both father and son. If these were feelings which age, sickness, and disappointment had not seared and deadened in Lord Holland, it was love, faith, and hope in the future of that son "yet in blossom." A pleasant future was here shadowed forth, to "show his eyes and grieve his heart." Reading the prophecy as to the future power of Fox, as we do, by the light of *its* "hereafter," it is a proof how clear was the vision and how sound the judgment of Junius. The political direction in which that power was likely to manifest itself was, of course, suggested to Junius by the accident of the hour.

Is Lord Mahon justified, under these circumstances, in re-echoing the old assertion about the extreme tenderness of Junius towards Lord Holland and his family,—in hinting at personal motives, generous feelings, grateful recollec-

tions, — or in asserting that even under provocation Junius refused to strike blow for blow?

How, again, is Lord Mahon's theory to be reconciled with Mr. Macaulay's? My Lord tells us that Junius spared Lord Holland because Francis had received benefits from Lord Holland, —and this sparing because of personal regard, —the evidence of this delicate and tender conscience—is to him so manifest, that he thence deduces certain conditions as preliminary to all further inquiry. Mr. Macaulay, on the contrary, maintains that Francis had no conscience at all, — that he could not confess the authorship because it would have disgraced him.—

"Is it strange that a very proud man should not confess what would disgrace him? I have always believed that Francis kept silence because he was well known to have received great benefits from persons whom he had as *Junius* or as *Veteran* abused with great malignity."

We must now ask, how does Mr. Macaulay reconcile his own theory with itself or with the Franciscan theory? Lord Mahon and the Franciscans generally hold that this proud man did "disgrace" himself,—did confess—if not in direct words, yet "in truth," in act, and in fact—that he was the writer. The data which are held to be so confirmatory of Mr. Taylor's theory—to say nothing of the theory itself—were furnished by Francis, by Lady Francis, and by Dubois, Francis's secretary. Has Mr. Macaulay forgotten "the ingenious evasion" which none but fools "could take for" a denial?—has he forgotten that Francis told his wife, as she said, and as he perhaps thought, "circumstances *that none but Junius could know*"?—that before he went to India he had "*avowed himself to be the author*, and his avowal was made known to the King and the Government"? Was it not Francis who marked the "coincident" in 'Junius Identified' with a forty years'-old letter, and left the letter there till it was found at the sale of his library? Was it not Francis who informed Wright that he, Francis, forty-three years before, had reported Chatham's speeches,—which information proved the singular penetration of the author of 'Junius Identified,' who subsequently arrived at the same conclusion from internal evidence? Was it not Francis who wrote the "complimentary" note signed "P. F." in Belsham's 'History of England'? Was it not "old Sir Philip" who knew his young wife's opinion, and "never contradicted" her? Was it not he whose first gift after his marriage "was an edition of Junius, which he bid her take to her room, and not let it be seen or speak on the subject"? Was not his posthumous present to her a copy of 'Junius Identified,'—which, says Lady Francis, "his son found in his bureau, sealed up and directed to me"? "To suppose," says Lord Mahon, "that Sir Philip bequeathed *such a book*, under *such circumstances*, he *not being, in truth, the author of Junius*, is to heap a most heavy imputation on his memory. It is to accuse him of *imparting a falsehood*, as it were, *from beyond the grave*."

Well, then, Francis did acknowledge himself to be the writer:—not in ambiguous givings out merely, but with more than ordinary solemnity, —speaking, "as it were, from beyond the grave." What, then, becomes of Mr. Macaulay's ingenious speculations as to why *he did not, would not, could not?*

Our own opinion on this subject is already before our readers [*Athen.* September, 1850], —and we are prepared to justify that opinion, should occasion arise. We have said enough, also, on the question as to Francis being the reporter of Chatham's speeches, at least until new evidence shall be adduced. Even then, we could not consent, "for the sake of brevity," to follow Lord Mahon's suggestion and example, and omit "the points connected with the earlier publications in contemporary newspapers, or in 'Almon's Anecdotes.'" Why, these "points" were heretofore held to be the evidence—to be conclusive. We were then told that if the speeches could be found, the same in substance though reported in other words, certain resemblances might be accounted for, but that they had never been published—that they had been kept in MS. for twenty years:—and now, when it has been proved that the more important of them *had* been contemporaneously published, not merely the same in substance, but verbatim—are we, "for brevity's sake," to treat all this evidence as so much irrelevant gossip, so much supererogatory trifling?—are we to treat the shadow as if it were the substance, the unsubstantial as if it were able to stand alone?

Lord Mahon, however, is pleased to act on his own suggestion, to confine his observation to the single speech of the 9th of January, 1770, to assume the truth of what Francis so opportunely whispered to Wright, Wright to Taylor, and Taylor to the public. He adds, however, a corroborative something to the significance and importance of this whispering, and then finds in the whole "a most striking coincidence" such as "no other theory of Junius supplies."—

"Omitting for the sake of brevity the points connected with the earlier publications in contemporary newspapers, or in Almon's Anecdotes, it may here be sufficient to state that in the volume of the Parliamentary History which appeared in 1813 a full account of the first day of the Session in the Lords, January 9, 1770, is introduced by a note as follows: 'This very important debate was taken by a gentleman who afterwards made a distinguished figure in the House of Commons, and by him it has been obligingly revised for this work. On application to the publishers *before the appearance of Mr. Taylor's book, and before his theory had been in any manner made known*, they at once admitted that the gentleman referred to was Sir Philip Francis."

We admit at once the force of this new evidence; but must add, that its force and relevancy depends absolutely on the fact that the application to the publishers and the admission that Francis was the reporter were made "*before* the appearance of Mr. Taylor's book, and *before* his *theory had been in any manner made known*." We admit further, that when we had occasion heretofore, in our review of Mr. Wade's volumes, to write on this subject, we had never heard or seen these important facts adverted to. All we then knew was, that in the autumn of 1812 was published the three-volume edition of Junius commonly known as Dr. Good's edition; which edition contained, and then first made public, the private Correspondence of Junius with Woodfall and with Wilkes, and one hundred and odd letters, selected from the *Public Advertiser*, then, for the first time, attributed to Junius. Public attention was immediately aroused,—old claims were revived and strengthened,—new claims were brought forward,—speculators of all sorts came rushing before the public, and amongst them Mr. Taylor. That gentleman, no matter by what light, direct or borrowed, had come to the conclusion, as stated ('Discovery,' p. 4), that the letters of Junius were "the production" of "*two gentlemen, neither of whom*" had "*ever been surmised to be the author*"—and he concluded (p. 139) with expressing his "conviction *that Dr. Francis and his son Sir Philip were the authors of the Letters of Junius.*"

We have spoken doubtingly as to the light by which Mr. Taylor made his discovery, without meaning in the slightest degree to question the integrity and good faith of that gentleman; but no man, in our opinion, can say positively by what chance or accident an idea of this sort, a suspicion of this nature, entered his mind. It was a vague possibility which occurred to him, perhaps, in the first instance,—it was probably a sort of idle conjecture or speculation, which, through some known or unknown channel, in jest or in earnest, may have been mentioned to Sir Philip. This may have been—*may* have been, we say,—in the winter of 1812. The idea, however, had taken root; and then followed the literary labour;—the research in Demosthenes and Horace for illustrations and parallel passages,—and then, as Mr. Taylor informs us,—

"*Before it* [The Discovery] *went to press*, I requested a friend to call on Sir Philip Francis, and inform him that, if he had the slightest objection to have his name connected with the investigation, he might rely on the total suppression of the work."—*'Junius Identified,' p. 7.*

—Sir Philip had no objection,—and said so. Forthwith, *after* this formal announcement and sanction, the manuscript was sent to the Printer, and the work was published,—not later than May, we presume, because in the Review in the *Monthly Magazine* for July, written, therefore, on or before the 20th of June, it is spoken of as having been published "some weeks" since.

Now, as to the publication of Volume 16 of the Parliamentary History. The Preface is dated "24 June." That is conclusive. However, out of respect to Lord Mahon, we will add a few circumstances. This work, as our readers know, was substantially a reprint of Almon's Debates, with such additions as offered themselves from contemporary journals:—the matter, therefore, of a volume was probably completed and put at once by the Editor into the hands of the Printer. There were five volumes published in the year 1813. Though no doubt actual publication was occasionally hurried or delayed according to the season, it is fair to infer that the printing went on regularly,—and this would give about ten weeks for the printing of each volume. Accordingly in the List of Books, published in September 1813 in the *Monthly Magazine*, is *Volume* 16 of the Parliamentary History.—The exact date, however, is of little consequence; as all we are concerned with is, a note of three lines, which might have been added at any moment while the type was standing, and *was* most probably added in the proof.

In brief, here are the facts so far as known to us. Sir Philip may have heard of Mr. Taylor's suspicions in the winter of 1812, or early in 1813;—he was formally informed of Mr. Taylor's theory in March or April 1813;—and Mr. Taylor's book was published in May. Whereas the manuscript of Volume 16 of the Parliamentary History was not, we suspect, sent to the printer until after the 24th of June,—*and was*, probably, *not through the press*—not beyond the reach and the insertion of a note—*before the end of July or the beginning of August*,—and not published, and could not therefore have been seen by Mr. Taylor, before August or September. What, then, becomes of Lord Mahon's "most striking coincidence"?—what of the extraordinary statement, that Volume 16 of the Parliamentary History was written, published, and the answer was given to Mr. Taylor, "*before* the appearance of Mr. Taylor's book, and *before his theory had been in any manner made known*"?

We can only suppose that Lord Mahon, like the reviewer in the *Edinburgh*, had never heard of 'The Discovery,' published in 1813, or had forgotten it,—and was thinking only of 'Junius Identified,' published in 1816.—But, having put the facts on record, we shall leave conclusions to the reader.

[ADVERTISEMENT.]—Died, on the 13th of September, at the Hermitage, Hampstead, William Dighton, Esq., deeply lamented.

IS TIÈN-TÈ A MAN OR A MYTH?

THE following is from a Correspondent:—who professes to be able to maintain his facts against all comers.

I have been much amused by the accounts which I have read relative to the Chinese Insurrection and Mr. Tièn-tè,—and am not at all surprised that your critical eye has detected the difficulties in the statements relative to this important but little understood movement in China.

Mr. Tièn-tè, *alias* Mr. Celestial Virtue, *alias* Mr. Heaven and Earth, as you say, is in one place made only twenty-three years old, having, however, married no less than thirty wives,—while elsewhere he is made to be the father of another celestial worthy aged about forty. Mr. Oxenford thinks that he is only a plaything in the hands of another person named Taepang, elsewhere spelt "T'hae Ping,"—the same respectable middle-aged gentleman, converted by the above reading into his son. MM. Callery and Yvan say, that their hero is still alive,—while Mr. Meadows believes that he is dead. I, in emulation of a certain cautious diplomatist of amusing memory, "believe neither the one nor the other,"—but venture, in answer to your query of last week, and in spite of the long, interesting, and "accurate" accounts which have appeared in our papers and even in those published on Chinese ground, to affirm that Mr. Tièn-tè is a myth and nobody at all. In support of this view, I beg to trouble you with the following observations on the secret societies of the Chinese—which, if they do not absolutely make good my position, and show that "Celestial Virtue," in China at least, is a name and no more, will at any rate be acceptable at this time, when Chinese affairs are becoming a topic of conversation, and our ignorance respecting them is becoming more evident every day.

The existence of secret societies throughout China has been mentioned by many writers,—but with such discrepancies existing among the accounts as would be expected to arise from the circumstances of the case:—the societies being of themselves secret, and the Chinese being most inveterately given in all cases—and in this they have special reason for it—to mystification and cunning, which are constantly leading even well-informed Europeans into the most perplexing and absurd labyrinths.

These secret societies have existed in China ever since 1674; and it has long been known that one of their principal objects was, the overthrow of the Mantchu dynasty. "Fan Tsing fuh Ming"—that is, overthrow the Tsing and restore the Ming dynasty—has been their watchword, says a writer in the *China Mail* of the 7th of July last, for nearly two centuries.

These societies exist wherever Chinese are found,—and the principles and objects which they *profess* are almost identical with those of the Freemasons. They go by various names in different, and even in the same, places,—and this fact alone has greatly increased the confusion which has arisen. At Singapore, these societies are called "*Tan Tae Hoey*," on the authority of a man named Abdullah, a Moonshee, a Malayan teacher whose information on the subject may be found in the 'Journal of the Indian Archipelago for September, 1852;' but the correct name is that given by Dr. Milne, the Principal of the Chinese College at Malacca (and sanctioned by Dr. Morrison, the author of the Chinese Dictionary), in the first volume of the quarto series of the 'Transactions of the Royal Asiatic Society of London,' page 240,—namely, "*T'heen té Hwuy*." "T'heen" signifies "Heaven,"—"Té," "Earth,"—and "Hwuy," "an Association of Men." Dr. Milne translates it into "Celesto-Terrestrial Society:"—literally, it is "Heaven and Earth Association."

In Earl's 'Eastern Seas,' published in 1837, at page 369, I find the following passage relative to these societies.—"To avoid persecution any Chinese finds it necessary on his arrival to become a member of one of the secret societies, all of which have the object in China of overthrowing the present dynasty,—while they are at Singapore rendered subservient to the national propensity for plunder, as one member will always screen another from detection. The different sects, however, hate each other cordially; therefore the peaceable inhabitants do not suffer so much from their aggressions as if they formed a united body."

In the year 1841, all the various branches of this Association, at Singapore, which sometimes have serious quarrels amongst themselves, cordially united in forwarding the British operations against China, by exerting themselves to the utmost in collecting provisions and supplies for the force; and so successful were they, that Mr. (now Sir George) Bonham, the Governor, received public thanks for the rapidity with which supplies for the fleet were collected. The Chinese were, in fact, looking forward to the immediate realization of their long-cherished hopes,—or, as they expressed themselves, "to the overthrow of the Mantchu and the restoration of the Ming" (dynasty).

By the year 1848, the T'heen-Té Association had made immense progress,—all the leading Chinese merchants of Singapore, who had previously kept aloof, having joined it. The leading member of the brotherhood was a man of great ability, named Seah Eu Chin; who had passed a very high examination in China as a "Literate,"—and whose administrative abilities were so great, that he had succeeded in reconciling the differences between the various branches of the Association and uniting them into one body.

Some time in the year 1851, intelligence arrived from China that the head Association of the T'heen Té Hwuy in China had commenced a revolutionary movement in the southern part of that empire,—and the news produced great excitement among the Chinese settled in the neighbouring countries. In Singapore they attacked the farms of the few Christian converts who were established in the neighbourhood of the French Missionary Establishment at Bukit Timah, and utterly destroyed them. The troops had to be called out; but before extreme measures were resorted to, the affair was compounded through the intervention of Seah Eu Chin, who had tact enough to cause himself to be looked upon as the friend of both parties,—the Association making good the loss. In Siam they attempted a revolution,—but it was suppressed by the authorities. In Borneo they attacked the Dutch and the few Chinese who lived under their protection. The latter were killed or driven out, those who escaped finding a refuge at Sarawak,—and the Dutch were several times defeated. These were mere ebullitions caused by the excitement consequent on the operations of the British Government against China,—and were restrained as much as possible by the leaders of the Association, who were anxious to secure friends among the foreigners.

I have never heard of any secret association among the Chinese that was not an offshoot of the T'heen Té Hwuy,—nor do I believe that any exist. Neither do I believe, in spite of MM. Callery and Yvan's authentic portrait of the Chief, that any individual of the name of Tièn-tè, T'heen Té, or Tan Te ever existed. T'heen Té is a very common expression among natives who are acquainted with the Association, but are not members,—just as "Judge Lynch" is used by the backwoodsmen in America. "T'heen Té will come out and set you to rights," is a common expression of Malays to Chinese who may be making a disturbance.

Another name for the same Association is, the "San Ho Hwuy," or three-in-one Society,—in allusion to the three principles, heaven, earth, and man.—Hence "Triad Society,"—the name used by Gutzlaff in his paper in the *Journal of the Royal Asiatic Society* for 1846:—which ought to be read by everybody who is desirous of learning the truth of the matter.

The members of the Association have no religion except a sort of worship of *Ancestors*; but I have no doubt that the leaders would engraft the Protestant form of Christianity upon their institutions if they could do so without decreasing their own influence, of which they are excessively jealous. One thing is certain,—that their jealousy of the Roman Catholic Propagandists is so intense, that they will root them out if they can. This jealousy arises from the influence acquired by the priests over the minds of their converts being beyond that to which the highest even of the leaders of the Association ever attain. The feeling has recently been exhibited in the destruction, by the "rebels," or "patriots," of the images and pictures in the Roman Catholic chapels.

In a long and interesting letter, signed Enquirer, which appeared in the *China Mail* of the 30th of June last, Mr. Tièn Tè is spoken of as "missing,"—and the leader of the rebellion is there styled "Hung Siu-tsiuen." But in the Overland edition of the same paper, dated a week later, there appears, under the head of "News from the Rebels," the following translation of an interesting letter said to have been sent to Dr. C. Taylor, an American Medical Missionary, who was received and hospitably entertained by the writer at Chinkiang, on his way to Nankin.—

"Lo, the Fifth Arranger of the Forces attached to the palace of the Celestial Dynasty of T'haeping, who have received the command of Heaven to rule the empire,—communicates the following information to all his English brethren. On the first day of the 5th moon (June 5th) a brother belonging to your honourable nation, named Charles Taylor, brought hither a number of books, which have been received in order. Seeing that the above-named individual is a fellow-worshipper of God (Shang-te), he is therefore acknowledged as a brother: the books likewise which he has brought agree substantially with our own, so that it appears we follow one and the same road. Formerly, however, when a ship belonging to your honourable nation came hither (the Hermes), she was followed by a fleet of impish vessels belonging to the false Tartars: now also, when a boat from your honourable nation comes among us, the impish vessels of the Tartars again follow in its wake. Considering that your honourable nation is celebrated for its truth and fidelity, we, your younger brothers, do not harbour any suspicions. At present both Heaven and men favour our design, and this is just the time for setting up the Chinese and abolishing the Tartar rule. We suppose that you, gentlemen, are well acquainted with the signs of the times, so that we need not enlarge on that subject; but while we, on our parts, do not prohibit commercial intercourse, we merely observe, that since the two parties are now engaged in warfare, the going to and fro is accompanied with inconvenience; and judging from the present aspect of affairs, we should deem it better to wait a few months, until we have thoroughly destroyed the Tartars, when, perhaps, the subjects of your honourable nation could go and come without being involved in the tricks of these false Tartars. Would it not in your estimation, also, be preferable? We take advantage of the opportunity to send you this communication for your intelligent inspection, and hope that every blessing may attend you. We also send a number of our own books, which please to circulate amongst you."

Here we have Mr. "T'hae-ping," or "Tae-pang," again introduced in rivalry with Mr. "Hung Siu-tsiuen," and no mention of the "missing" (*quære* mythical?) Tièn Tè.

The above letter, whether authentic or not, offers one useful piece of advice,—namely, that we should not interfere, but leave the Mantchu and the Ming to settle matters between them. But though we should not interfere, there is no reason why we should not try to understand what is going on,—were it solely for the reason that such a change

as is threatened in the government of that vast country must, in some manner, affect our commercial position in China.

OUR WEEKLY GOSSIP.

THE comet which attracted general attention about ten days since has now become invisible in these latitudes,—but will still be seen in the southern hemisphere, in the constellation Hydra. It was in perihelion on September the 1st, and nearest the earth on the 5th. Its brilliancy rapidly increased towards the end of last month; and though the comet approached nearer to the horizon every evening, its nucleus was more and more luminous on each succeeding night, till, as it descended below the horizon a few minutes after the sun, the head was far brighter than a star of the first magnitude. The maximum degree of brilliancy occurred on September the 3rd; on which day, shortly before 1 o'clock P.M., the nucleus was perceived in full daylight by Mr. Hartnup, of the Liverpool Observatory. It appeared round, and about 9″ in diameter, without any appearance of a tail.—The last comet observed at noonday was that discovered by Mr. Hind on February the 6th, 1847; which was distinctly seen when only a few degrees distant from the sun's limb. History makes mention of several of these bodies which have attained such vast brilliancy as to become conspicuous objects near the sun without telescopic aid. The comet of 1106 was seen on the 4th and 5th of February, "from the 3rd to the 9th hour of the day," close to his limb, in England, France and Germany. The "terrible" and "prodigious" comet of 1402 (probably the most astonishing of any on record) was observed for eight days near the sun in various parts of Germany and Italy. The second comet of 1618 was distinguished at noonday in Bohemia,—both tail and head being distinctly visible; and the grand comet of 1843 was observed on the 28th of February near the sun's limb at many distant stations—in Italy, at the Cape of Good Hope, in the United States, &c.—The late comet has been very generally mistaken for that of 1264 and 1556,—whose return to perihelion is anxiously expected by astronomers. The orbits of the two bodies, however, are materially different; and the calculations of M. Bomme have shown that, supposing the comet of 1264 to have re-appeared in 1556, it will not again arrive in these parts of space for several years to come.

We have to announce, with deep regret, the death of Mr. H. E. Strickland, who was killed on Wednesday by a railway train, whilst examining the strata of a railway cutting on the Manchester, Sheffield, and Lincolnshire line. The melancholy particulars are thus given in the daily papers.—"Mr. Strickland arrived at East Retford on Wednesday from Hull, having attended the recent meeting of the British Association. He was attached to the Geological Section of the Association; and in pursuance of his practical investigations in that science, he proceeded on Wednesday afternoon to examine the strata of the deep cuttings on each side of the Clarbrough Tunnel, about four miles distant from Retford. A little after four o'clock, a boy at work in the fields observed him standing between the two lines of rails, near the mouth of the tunnel, on the Gainsborough side, with a pocket-book in his hand, apparently engaged in making notes. At this time, a coal train was approaching on the down line,—to avoid which he stepped off the 'six feet' on to the up-line;—but unhappily he did so just at the moment when the Great Northern passenger train was issuing from the tunnel. The train dashed upon him,—and the next instant he lay a shattered and shapeless corpse."

The Ray Society held its Tenth Annual Meeting at Hull, during the meeting there of the British Association—W. Spence, Esq., in the chair. From the Report it appears, that during the past year the receipts had been 529*l.*, and the expenditure 466*l.*, —leaving a balance in the Treasurer's hands of 63*l.* The Report complained of the arrears of subscriptions. The cause of delay in the issue of the last Part of Messrs. Alder and Hancock's work 'On the Naked Mollusca' was stated to be, the wish of the authors to add as large a mass of new matter as possible. Of two works for 1852,—one containing a translation of Braun 'On Rejuvenescence in Nature,' Kohn 'On Protococcus,' and Menighini 'On Diatomaceæ,'—was nearly completed. The second volume of Mr. C. Darwin's 'Barnacles and Sea-Acorns' is in the press. For 1854, the Council propose to publish Prof. Allman's work 'On the British Freshwater Polyzoa,' with coloured plates, in imperial 4to.,—and the fourth and last volume of Agassiz's 'Bibliography of Zoology and Geology.'—The secretary, Dr. Lankester, stated, that Prof. Williamson's and Dr. Carpenter's work 'On the Foraminifera' was in progress, and would probably be published for 1855.

A Cholera Committee, appointed by the Epidemiological Society of London, is understood to be diligently engaged in investigating the origin and progress of the present outbreak of cholera in this country.

One part of the idea which the Society of Arts had in lending the credit of its name and the means at its disposal towards creating a point of union among existing Mechanics' Institutions has been accomplished. A list of lecturers has been made out and issued. For reasons which are obvious on the face of the document, this list has been compiled by the Society of Arts, not on its own knowledge of the fitness of the several persons to discharge the duties of public teachers, but on the recommendation of the Institutions themselves. Without meaning to insinuate an objection to any name on this list, we must say that such a mode of collecting a body of teachers is open to question. Doubtless, the recommendation of an Institute before which he has lectured should be a good testimonial for a lecturer,—and under certain circumstances it would be one of the best that could be produced. But when it is remembered that the lecture-system has hitherto been a failure, that the most popular lectures have been precisely those which were among the least efficient, a suspicion may naturally arise as to whether the Institutes are in all cases the best judges in the matter. The Society of Arts seems to have felt this strongly: for it cautions its clients not to allow too much importance to the fact that any particular set of lectures is recommended by several Institutions. As it stands, the list will be of use; though, for ourselves, we cannot but think it would have been a more satisfactory course had the Society of Arts undertaken to compose the list in its own name. A year's experience of the new system will show, however, both its merits and its defects:—when it may be consolidated or amended as circumstances shall seem to require.

The preliminary works for the new Westminster Bridge, designed to correspond in character and proportions with the New Palace, have been commenced in the bed of the river. It is understood, that Sir William Molesworth, honourably anxious to distinguish his tenure of office by striking improvements in the aspects of the metropolis, has given orders for the works to be carried on without delay.

A few days ago died in an obscure corner of France one of the many claimants to the name and honours of Louis the Seventeenth. Some twenty years ago the wheel of Fortune—nowhere so capricious in its jerks, as in France—had thrown two men into the same dungeon of St. Pelagie. They were both little, round, fat men,—with a taste for good wine and good dinners; one, lively, shrewd, sparkling, a ready talker, an ultra-liberal, and a dandy,—the other, slow and prosy, much addicted to sentiment and roast capons. The first was, Armand Marrast, editor of the *National*, and one of the most formidable of Louis Philippe's discontented subjects;—the second was, the so-called Baron de Richemont,—in whose coarse and kindly face the chivalry of France believed it traced the royal lineaments of Louis the Seventeenth. Marrast, in his kindly banter, called his friend what his friend called himself, Capet; made jokes for him, laughed at him, and praised his cookery—for Capet, like all his supposed race, was great in the kitchen. Another jerk of the wheel of Fortune! and the two men were once more face to face. This time, it is in the Hôtel de Ville,—Marrast is Mayor of Paris, and his friends are masters of France. Capet is before him with a memorial, claiming from his old friend one of the great thrones of the world. Marrast smiles:—since he put on those exquisite yellow gloves and scattered on his person those wondrous scents, he has learned to smile less sardonically than of old. He cannot give up France, even to the best of cooks,—for he is already Mayor of Paris,—has the Presidency of the National Assembly in his grasp,—and the office of the Capets seems within his own possible reach. Capet founds a newspaper, and attacks his old friend of St. Pelagie. One more whirl of the wheel!—Capet and Marrast are both lost to sight and to remembrance. The world goes on its way,—and no one thinks of the aspiration and the despair of these rivals for place and power, till one bright day some solitary tourist, hearing a passing knell, inquires the name of the obscure dead, and hears—not without emotion perhaps—that it is Armand Marrast or the Duke de Richemont.

A Correspondent writes to us to urge the adoption of a stamped sheet of letter-paper in place of the stamped envelope. Certain advantages would result from his proposal:—chiefly this, that the letter, cover and address would be all on one piece of paper, and the post-marks legal evidence for the contents. Under the system now almost universal —except in banking and commercial houses—of writing the letter on note-paper and the address on an envelope, the legal proof of transmission is intercepted. But our Correspondent somewhat exaggerates the importance of his idea. A plain sheet of letter-paper, with a stamp affixed to it afterwards, meets all the requirements of the case; —and this, we believe, is the mode adopted by lawyers and men of business in their correspondence. Probably it is not so pretty as the Government stamp,—and we see no reason why the Post Office, which now sells stamped envelopes, should not also, if the public wish it, sell stamped letter-paper.

The small house occupied by Fernando Cortez at Castilleja de la Cuesta, near Seville, has been purchased by the Duke of Montpensier, with a view to its repair and preservation as a national monument.

Notes from America report, that an unexpected literary activity has been suddenly displayed at the Russian embassy:—a display which serves the press of Washington with food for some laughter, and affords a pretext for reviving an amusing anecdote. It appears, that M. Bodisco, Muscovite Minister at the White House, has thought it due to himself to be offended with the free language of the republican press,—and in a temper of mind more Oriental than discreet he has resolved to bridle the offending prints. American writers, however, are not disposed to tremble at a diplomatic frown; and with more good humour perhaps than high official courtesy they remind his Excellency of an incident well remembered in the neighbourhood of the American Syracuse, and not altogether without its application to the matter now in dispute. M. Bodisco and his suite were on a trip to Niagara; when at Syracuse a secretary, or attaché, quarrelled with a station porter, and in his anger struck him, in true Muscovite fashion. The porter turned on the official,—who, thereupon, claimed the protection of his master. M. Bodisco stated his name and rank; and the conductor of the train replied that, as such breaches of the peace could not be allowed in the United States, he proposed that the porter should be appeased by an apology. Here was a pass for the representative of Russian majesty: —apologize to a porter! Did the man understand that he had the honour to address M. Bodisco? "If you were the Emperor of all the Russias himself," said the conductor coolly, "you should apologize." He added, that the train would not move an inch until the porter was satisfied. Fancy the consternation of the courtly circle! M. Bodisco leaped out of the car:—"I order this train to go on," he cried, with his grandest look. The passengers stared—the engine-men looked aside—the smoke of the engine curled up lazily in the air. "I order this train to go on!" cried M. Bodisco, with increased vehemence. The driver whistled,

and the little boys gathered round to see the fun. Happily a Washington acquaintance of the great man came to the spot; M. Bodisco appealed to him,—and a long and picturesque discussion followed in a foreign tongue between the mediator and the minister. The issue was, that, like a prudent diplomatist, when he could gain no point, M. Bodisco gave it up with such grace as he could. Apology was made—the porter appeased—the bell rang—the train started—and two or three persons quitted Syracuse with what the Americans would call a "new wrinkle."—Such is the story told by the Transatlantic journals. It may be doubted whether any attempt to bridle the republican press and regulate in a Muscovite sense the issues of free thought in America will bring a larger share of glory to the adventurous subject of the Czar than his contest with a railway porter.

FINE ARTS

FINE-ART GOSSIP.—A Manchester paper—we *must* give the name, not from any malicious motive, but in order to protect the other papers of that city against the imputation—the *Manchester Guardian*—has undertaken to defend the Dalton absurdity, in answer to the remarks which we made a fortnight ago when announcing the Committee's singular notion of enriching the Lancashire metropolis with a new work of Art by means of a copy of one of the city's old ones. We know not, of course, how far the arguments of the *Guardian* reflect the sentiments of the city,—but if to any great extent, then we have little more to say on the subject. The men of Manchester have a perfect right to multiply copies of the same work of Art in all the streets of their city if they be so minded:—but communities that do eccentric things must consent to undergo the comments of their neighbours. If a Manchester gentleman takes home a guest to share his mutton, and, desirous of rising to the dignity of a second dish, has the joint removed by another of the same, no one can fairly question his title to do his hospitalities after his own plan,—though the fact can scarcely fail to lead to some remark. If the Mayor of the city should do this, and invite all the world to dinner, so singular a reading of the "*revenons à nos moutons*" would be tolerably sure to provoke the criticism of the Press. So far as we understand the *Guardian*, the power of making a statue of Dalton went to the grave with Chantrey, because the philosopher is no longer here to sit to the sculptor. Does the *Guardian* not know that statues of deceased worthies are made every day from surviving data, and recognized as very faithful renderings;—and that in the instance of Dalton, the portrait by Lonsdale, and this very work in the Royal Institution, if it be so like—which, we believe, is disputed—would be the documents consulted for resemblance? By what singular confusion is it, that the *Guardian*, which sees the possibility of copying the whole statue, cannot see how it is possible to copy that quality of it which is likeness? Another argument of the *Guardian* we really do *not* understand. Somehow, that journal seems to conclude that because Chantrey said the sage must be taken in his Doctor's gown and in a sitting posture, he can henceforth be represented no otherwise, and with those attributes, by nobody else. We fail to follow the inductive process by which so curious a proposition is reached. Such poverty and confusion of thought as are implied in the device of getting a new work by means of repeating the old one are certainly not likely to suggest a very rich or lucid logic. With all deference to the recommendation of the *Guardian*, we do not believe the men of Manchester will do any such thing:—will consent to accept for their town the title which our contemporary *Lloyd's Newspaper* has prepared for it—"the city of the *Dromio* Daltons." If they do, Chelmsford must be content to resign the cap and bells which she wears with such a grace. In the face of this Manchester achievement, that town cannot hope to retain the prize of Art-absurdity on the mere strength of so comparatively prosaic an act as having put its Judge upon the town-pump—and symbolised the distribution at once of nymph and of law by a water-god in a wig.

The collections of the School of Design have been wholly removed from Somerset House, and the rooms are now in possession of the Registrar-General of Births, Marriages and Deaths. Under its new title of Central School of Art, of the Department of Science and Art, the school is now located at Marlborough House. Elementary instruction in design will be in future afforded, as most of our readers know, in the district schools already established—the Mechanics' Institute, Westminster, St. Thomas's Charter House Schools, Finsbury,—and in those about to be founded in the parish of St. Martin's and elsewhere throughout London and its suburbs. The higher branches only will be taught at Marlborough House.

The Liverpool Academy has awarded its annual prize of 50*l.* to W. Holman Hunt, for his picture of 'Claudio and Isabella.' This is the second time that the same gentleman has gained this prize.

MUSIC AND THE DRAMA

OPÉRA COMIQUE OF PARIS.

THAT the *Opéra Comique* is a wonderful theatre, and that the French are a wonderful people, never occurred to us more strongly than on witnessing a representation of 'Nabab,' M. Halévy's new opera, set to a *libretto* by MM. Scribe and St.-Georges. The success of this seems to be almost as decisive as that of its composer's 'Mousquetaires' and 'Val d'Andorre.' It is wonderful, and nothing less, to those who lament over the power so liberally bestowed, and so perversely thrown away in England, to observe what effect can be produced by the force of admirable acting and accomplished singing among a "cast" hardly one member of which has voice enough "to hurt a fly." Madame Favel is a charming *mezzo soprano*,—Madame Miolan Carvalho is a *prima donna* who rivals in the conquest of vocal intricacies that over-estimated lady, Madame Ugalde; but in England neither lady would sing at all,—so small is the power, so uninteresting the quality, of their respective *bird*-organs. Then, among the men, though MM. Couderc and Mocker (the *Hamlet* and *Horatio* of 'Nabab,') are consummate actors and clever musicians,—that is all:—M. Bussine being literally the only vocalist included in the set who can be accepted as "in working order." Somehow, this universality of defect is not of the slightest consequence to the effect of the music, owing to the grace, skill, and steadiness with which it is carried off. The orchestra picks up and plays down to these capital folk, so that not a single note is lost nor a single chance thrown away; the chorus sustains them without overbearing them;—while acting, *costume*, and stage management do the rest, in producing a perfect presentment of music and of story.—And what a story have MM. Scribe and St.-Georges this time concocted for M. Perrin's *corps* to act and M. Halévy to set! Finality is dangerous (above all as regards theatricals) in the case of such a wonderful people as the French,—or we should say that absurdity can no further go than in the *libretto* of this 'Nabab.' It has reminded us of more than one moral tale by Marmontel,—of Lady Morgan's 'Princess,'—of the *Begum* and *Blanche Amory* in Mr. Thackeray's 'Pendennis,'—of the boarding-school *ballet* described by Miss Mitford, where *Orpheus* was sent forth to seek *Eurydice* in Scotland. Let us attempt an imperfect outline of this "wondrous tale."—Lord Evandale is an English Nabob, residing in Calcutta, who has married "a star of the theatre"—a certain Corilla (one of those theatrical ladies who are occasionally marrying somebody), with whom he reciprocates the liveliest—no, the most languid—sensations of antipathy. She chooses to go to balls escorted thither by his cousin Sir Arthur,—he sits at home and sulks, until the *ennui* of such a partner in such a climate becomes too much for him, and like a true English Nabob, he determines (in a lazy sort of way) on "shuffling off this mortal coil" by aid of a bottle of opium. The poison is in the wine, and the drink is at the doleful gentleman's lips, when an intercepting angel appears in the person of a long-lost friend, one Dr. Clifford, supposed dead during many years, but who had been learning life, cheerfulness and philosophy under the knout of Russian captivity, and who takes Calcutta in his way home. He undertakes to cure Lord Evandale—if the latter will implicitly abide by his directions,—depart on the spot for England, and play the part of a poor workman for twelve months. Lord Evandale consents (having previously, it should be told, made a will bequeathing all his earthly possessions to this same Dr. Clifford). Also, before the first act closes, he is exhibited as doing a generous action by a lovely maiden, Dora; who, belonging to Wales (and, as a Welsh girl should, wearing a *Mary Stuart* hat and a plaid petticoat) and finding herself alone in India, naturally wishes to get home,—and applies to the *blasé* Nabob to pay her passage for her.

Betwixt the first and the second acts the sea is crossed, and we find ourselves in Uncle Toby's snuff-manufactory (!) in Wales. Here Dora is book-keeper; here Lord Evandale has worked a twelvemonth, and, we are sorry to say, has made love to the book-keeper, who, of course, has no idea that he is her Indian benefactor in disguise. Uncle Toby, however, suspects something. This so-called George Preston is a first-rate *solo* performer on the violin (!), and accordingly must be turned away. Dora, however, prevails in his favour, and he is retained; and as it happens, that very day, that Dr. Clifford turns up to look after his patient, bringing with him the news that Lady Evandale and her cousin *servente* Sir Arthur, who were coming in quest of the run-away, have been lost on the voyage to England,—our hero can propose honourable wedlock to Dora.—He does so,—to the infinite joy and thankfulness of the young lady in the tartan skirt. That very same day, however, the *ex-prima donna* and her cavalier turn up at the snuff-manufactory in Wales also; since the report of their shipwreck was a lie of their own making, promulgated for the express purpose of mystification. 'Tis inconvenient, their arrival; and none the less so because Dr. Clifford has invested his friend's fortune in the purchase of the estate on which Uncle Toby's snuff-mill is situated, including castle, manufacture,—Uncle Toby, workmen, and all. But commendus to M. Scribe for cutting the knot of an inconvenience! It turns out that Lady Evandale is not Lord Evandale's wife at all, but the long-lost spouse of this capable Dr. Clifford! The *dénoûment* may be foreseen, and it is charming and comfortable:—since the most sluggish imagination will not hesitate (after the curtain has fallen) to hope—nay, to be sure—that some measure of delivery, too, awaits our *Esculapius*, and that long before Corilla was

Mrs. Clifford—she may—must—have been *Madame* Somebody Else?

Such is the precious story of 'Nabab':—and a broader and wilder piece of buffoonery it will be admitted seldom comes under the critic's ken.—No matter: it seems to be mightily relished by the Parisians:—and, to confess the truth, it is rather irresistible, in the mixture of absurdity and stage-craft which it exhibits. Then, M. Halévy's music is flowing, neat, intelligent,—in places effective,—everywhere capitally scored: brighter and better on the whole than the music of his last two comic operas, though not the marvel of freshness and melody which M. Halévy's panegyrists pronounce it to be. Story and music together,—'Nabab' may be rated as a higher work of its farcical order than 'Le Caid,'—and thus, as likely to penetrate further, and (perhaps) to last longer.

A word on other matters connected with the *Opéra Comique*. The real artist there is, M. Battaille; who aids his admirable and steady singing and sound manly voice by acting of the first class,—doing credit to his counsellor, the inimitable M. Bouffé, by whom he is said to have been trained. Mdlle. Duprez, we suppose, may be considered the leading lady; but her voice, unhappily, is even more fatigued than it appeared to be in the larger arena of our London Opera House,—and thus her execution is less certain than execution so ambitious ought to be. She has improved as an actress.

A new opera by M. Meyerbeer, whether serious or comic, cannot come out, it would seem, without an amount of prefatory rumour and controversy which, be it agreeable or disagreeable to the *maestro*, is, at all events, helpful as an advertisement. We stated not long since in the *Athenæum*, on the authority of the *Gazette Musicale*, that the work is an entirely new one; but the French *quidnuncs* will hardly be satisfied that it is not a version of 'Le Camp de Silésie,'—and there has been, even, a rumour of formal opposition to its production on the strength of a clause in the charter of the *Opéra Comique* prohibiting the performance of translated works. This, however, we learn, has been set aside by a formal repetition of the asseverations already quoted in this journal,—and the time fixed for the production of 'L'Étoile du Nord' (so runs the title provisionally) is, December. The opera has been read and "cast,"—towards Carnival tide of 1854, then, we may begin to expect it.

DRURY LANE.—Among the new characters attempted by Mr. Brooke in London during his present engagement, is that of *Iago*. As the contrast to his *Othello*, and exhibiting him under a completely novel phase, his assumption of "mine ancient" is an event which must be noted. Iago requires for its impersonation qualities the very opposite of those needed for the presentment of the generous Moor. Intellectual energy and subtle acumen are its proper attributes. There is little room for that display of vocal power, those tones thunder-deep, in which Mr. Brooke rejoices to express the energy of passion. It is to his credit, that in Iago he does not attempt these athletic surprises. He contents himself for the most part with the level and familiar tone of dialogue, and is careful to bring out the jealous traits of Iago's native disposition. All passages in which allusion is made to the suspicions that "like poisonous minerals gnaw his inwards," were intoned with a depth of emphasis, and a bass delivery hoarse with the intensity of emotional conviction. Here was a right conception,—and its execution was so brilliant as to command and justify the admiration of the house. Mr. Brooke was not equally successful in the general developement of the character. He looked too young, and wanted apparent weight. There were in him none of the outward signs of a long worldly experience; and the action, which should have been broad and sweeping, had an ostentation of neatness, approaching the pretty. Altogether, the performance was too facile,—not sufficiently elaborate.—We are, however, grateful for the opportunity which it gave us of making acquaintance with Mr. Davenport's Othello. This gentleman's first entrance was marked by grandeur of personal appearance and majesty of carriage. As he proceeded in the part, we gathered confidence in his ability to do it justice. There was, indeed, a prevailing tenderness in his tones, which bespoke the "loving and the generous nature" ascribed by the poet to his hero. In the high accesses of passion there was not, on the other hand, that sustainment of oral enunciation which is gained by continual practice in tragic elocution; but there were both feeling and force that reached the hearts of the audience, if they did not exactly "confound the very faculties of eyes and ears." Everywhere the text was delivered with intelligence and care; and the passionate bursts, without being overpowering, had enough of physical force to win loud applause. These effects were produced almost as frequently though not in the same places by Mr. Davenport as by Mr. Brooke. Both Othellos are equal in stateliness; but Mr. Davenport owes less to vocal vehemence than Mr. Brooke, and depends more on the inherent pathos of the situations and the poetry. There is presence of mind throughout; and what is deficient in the executive portion of the acting will probably be remedied by further practice.

SADLER'S WELLS.—The tragedy of 'Virginius' was performed on Monday, and afforded another illustration of the improvement attained during the recess by Mr. Phelps in his style of acting. Trusting entirely to the poet for what are technically called "points," he has modulated his elocution so as to bring out the utmost variety of which his organ is capable,—and carefully distributes the different tones, so as to throw the requisite degrees of colour on specific parts of the text, and secure relative proportions of light and shade, calculated to produce in proper relief the particular phases of sentiment or of passion with which he wishes to impress his audience. All this is artistically managed, and evidently is the fruit of study;—but something is yet wanting. The *pace* is equal throughout. The slow movement of the words is invariably the same. Whatever the emotion may be, the pronunciation is not quickened;—the tune is varied, but the time is uniform. Transitions of delivery from the tardy to the rapid are among the "tricks of the stage" at which good taste revolts; but the rule that repudiates these does not inculcate an entire monotony in time. It demands occasional changes in accordance with the state of mind intended to be expressed. We venture on these remarks in relation to Mr. Phelps's acting, because he is a performer who labours diligently at self-improvement, and is not above taking advantage of a profitable suggestion. His *Virginius*, generally excellent as it is, would have been less fatiguing both to himself and to his audience if here and there the passion had been allowed to flow more freely.—The part of *Virginia* was picturesquely represented by Miss Cooper; who, however, has the same fault of a too-measured tone, which substitutes a reading for the acting of a part.—Mr. Marston threw considerable emotion and energy into the love of *Icilius*, and made the most of the few opportunities provided for him by the dramatist.

MUSICAL AND DRAMATIC GOSSIP.—The Autumnal Musical Festivals at Bradford and Gloucester are now over; and both the new meeting, which may be said to have broken fresh ground in its manufacturing locality, and the old one, which may be said to hold its tenure of existence according to the traditions of past dispensations, appear to have gone off with spirit, and to have been more than ordinarily successful. At the Yorkshire gathering, Mendelssohn's 'St. Paul' and MS. 'Credo,' of which we must speak on some future opportunity—and Signor Costa's 'Baptismal Anthem,' which likewise we must reserve for some other occasion, were the chief novelties. The chorus seems to have surprised and delighted such of the metropolitan *cognoscenti* as had forgotten that Lancashire and Yorkshire were known as the strong-holds of part-singing—and the treasure-houses, too, it may be added, of rich and robust voices—long ere Harmonic Societies and Hullah classes were thought of in our capital. We are obliged to the kindness of a Correspondent from Leeds, who enables us to correct an error into which we had fallen,—by claiming for the district where the Bradford Festival was held another of its "illustrations." It seems, that the *solo* violin-player to whom we alluded last week as engaged at the Festival under the title of "Herr" Carrodus, is a native of Keighley, in Yorkshire. The name, our Correspondent further tells us, is one not uncommon in certain parts of Yorkshire. We may be permitted, perhaps, to turn the above correction to account, by adducing the proficiency, the engagement, and the success of Mr. Carrodus (in which our contemporaries seem all to be agreed) as an instance to the full justifying our late remarks on the quality of education now attainable in England;—every new glimpse that we take of the Continent confirming the assurance that this country is advancing as regards the Art more rapidly even than certain lands, long considered as "Music's chosen seats," are retrograding.—There appears to have been little or nothing in the Gloucester *programmes* to call for special remark.

Meanwhile, whatever be the passion for music in the provinces,—the resolution to have music-rooms—for monster, middle-sized, chamber, and pocket performances—seems to increase. Liverpool had already its magnificent Philharmonic Concert-room,—and is, some time or other, to have its St. George's Hall, many sizes larger, for which a *Behemoth* of an organ, a shire of chorus-singers, and a regiment made up of all the orchestral regiments in Europe, will not be too enormous,—to say nothing of some three or four minor places of gathering. The latter, it would seem, must be well frequented,—since we now perceive that yet another concert-room—"of sufficient size to seat comfortably 750 persons"—has just been opened in Liverpool, on the site of the old Music Hall, which was closed some twenty-five years ago because the town did not afford patronage or interest in the Art sufficient to make one place of assembly remunerating as a property.

After two seasons of existence, the Musical Institute of London has been dissolved at a general meeting of its members.

In sketching the history of odd, spasmodic summer attempts at English operas in London, we must not omit to record the recent appearance of Mr. Augustus Braham, for a night or two, as the successor of Mr. Sims Reeves.

Early in the present year, the *Conservatoire* of Brussels offered as prize a gold medal, to the value of 1,500 francs (60*l*.), to the composer of the best Symphonies. Thirty-one works, it appears, were sent in,—and the medal has been awarded to an amateur, Herr Ulrich, of Berlin.

It is said in Paris, with what warrant in truth we have no idea, that Herr Wagner is about to organize a company of actors for the purpose of performing his musical dramas, and travelling with them through Germany and France.—The French journals, too, mention that the Singing Society of Cologne Gentlemen, so favourably received in London, have received magnificent offers to give concerts in America, which there is some possibility of their accepting.—We are informed, on tolerably good authority, that Madame Goldschmidt intends to come to England next year to make a concert tour.—In a letter from Germany, we learn, that the Directors of the *Gewandhaus* Concerts at Leipsic, being in some difficulty as to the possibility of finding a competent and popular conductor during their coming winter season, have offered the *bâton* to Mr. W. S. Bennett.

TWENTY-THIRD MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

WE last week reported the proceedings of the first day,—which consisted of the meeting of the General Committee in the morning, and the delivery of the President's Address in the evening.—On Thursday morning the Committees of Sections met at ten o'clock, and the Sections at eleven o'clock. In the evening a *Soirée* was held in the Music Hall, when about 650 persons were present. The Hall was tastefully decorated, and specimens and objects of interest were exhibited.—On Friday evening Prof. J. PHILLIPS delivered a discourse 'On the

Physical Geography of Yorkshire,'—which was listened to by a large audience.—On Saturday several of the Sections did not meet,—as there appears to be a tendency on the part of the members to devote the Saturday, as heretofore, to excursions. The Sections that met were those of Mathematical and Physical Science, Chemical Science, and Statistics. —On Monday afternoon, at three o'clock, the General Committee met in the Library of the Infirmary, for the purpose of determining the place of meeting next year and electing officers. In the evening, Prof. HUNT delivered a lecture 'On Photography,'—Sir W. Hamilton proposed a vote of thanks.—On Tuesday many of the Sections closed their business, and in the evening a second *Soirée* was held in the Music Hall.—On Wednesday the General Committee assembled to sanction the grants asked for by the Committee of Recommendations. In the evening the usual General Meeting was held. —Thursday was devoted to excursions to Beverley, Bridlington, Flamborough Head, and other places of interest in the neighbourhood.

GENERAL COMMITTEE.

MONDAY.

The President of the Association in the chair.—Invitations for the next year's Meeting were made from the following places:—Liverpool, Glasgow, Dublin, Leeds, Brighton, and Gloucester. Dr. DICKINSON, Mr. J. B. YATES, and others, spoke in favour of Liverpool,—Dr. WALKER-ARNOTT and Mr. LIDDELL spoke for Glasgow,—Dr. STEVELLY for Dublin. The application from Leeds was for 1856. Gloucester was supported by Mr. GASSIOTT, Mr. GROVE, Mr. H. E. STRICKLAND, and Dr. DAUBENY. No motion was made in favour of any of these towns, except Liverpool. It was moved by J. HEYWOOD, Esq., M.P., seconded by Mr. SMITH, of Jordan Hill, and carried, that the next Meeting in 1854, be held at Liverpool. It was moved by Colonel SABINE, and seconded by J. B. YATES, Esq., that Lord Harrowby be requested to take the office of President elect. It was moved that Lord Wrottesley, Sir Philip de Malpas Grey Egerton, Bart., Dr. Whewell, Master of Trinity, Prof. Owen, W. Lassell, Esq., and J. B. Yates, Esq., be Vice-Presidents. That Dr. Dickinson and Dr. D. P. Thomson be Local Secretaries. That Mr. Robert M'Andrew be Local Treasurer. The thanks of the Meeting were given to Dr. Royle for his services as Secretary. Colonel Sabine was requested to undertake that office,—to which request he assented. Prof. Phillips was appointed Assistant General Secretary. The following, in addition to the usual officers, were appointed the Council for the year ensuing:—Dr. Walker-Arnott, Sir H. De la Beche, C. C. Babington, Prof. Bell, Prof. Daubeny, Prof. E. Forbes, Prof. Graham, J. P. Gassiott, W. R. Grove, R. Hutton, L. Horner, J. Heywood, Sir C. Lemon, Dr. Miller, Dr. Lankester, Prof. Powell, Sir R. Madden, H. E. Strickland, Prof. Stokes, and the Bishop of Oxford.

WEDNESDAY.

The General Committee met in the Library of the Infirmary for the purpose of hearing the Report of the Committee of Recommendations:—the President of the Association taking the Chair.

Mr. J. THOMPSON, of Belfast, presented, and Mr. J. OLDHAM and the MAYOR of HULL supported, a recommendation this morning agreed to at the adjourned discussion in Section G, on the subject of Richardson's Life Boat; so strongly convinced was that sectional committee of the great value of this life boat, that they requested the General Committee to recommend to the Government a trial thereof.—This communication being received after the Committee of Recommendations had closed their labours, it could not be entertained by this Committee, but was referred back to Mr. Thompson, to address, in a modified form, the Council of the British Association.

The PRESIDENT suggested that the best way would be to have a Report upon life boats; then, if this proved to be the best, the Association could report that fact to the Government.

The following recommendations were adopted.—

Involving Grants of Money.

That the sum of 200*l.* be placed at the disposal of the Council for the Maintenance of the Establishment of the Observatory at Kew.

That the Committee appointed to investigate the Physical aspect of the Moon be requested to endeavour to procure Photographs of the Moon, from Telescopes of the largest size, which can be made available, with 25*l.* at their disposal for the purpose.

That the expense of certain Thermometers constructed for the inquiry on Conduction of Heat, by Prof. Forbes, amounting to 4*l.* 2*s.*, be paid.

That Dr. Hodges be requested to continue his investigations on Flax, with 20*l.* at his disposal for the purpose.

That Mr. Rankine, Dr. Robinson, Prof. Hodgkinson, and Mr. Ward be requested to continue the Report on the Cooling of Air in Hot Climates, with 20*l.* at their disposal for the purpose.

That Mr. Fairbairn be requested to prepare a Report on the effects of Temperature on Wrought Iron Plates, with 10*l.* at his disposal for the purpose.

That Mr. Mallet be requested to continue his experiments on Earthquake Waves, with 50*l.* at his disposal for the purpose.

That Dr. Lankester, Prof. Owen, and Dr. Dickie be a Committee to draw up Tables for the Registration of Periodical Phenomena, with 10*l.* at their disposal for the purpose.

That Dr. Lankester, Prof. E. Forbes, and Prof. Bell be requested to assist Dr. T. Williams in drawing up a Report on British Annelida, with 10*l.* at their disposal for the purpose.

That Mr. Hyndman, Mr. Patterson, Dr. Dickie, and Mr. Grainger be requested to carry on a system of Dredging on the North and East Coasts of Ireland, 10*l.*

That Mr. H. E. Strickland, Dr. Daubeny, Prof. Lindley, and Prof. Henslow be requested to continue their Experiments on the Vitality of Seeds, with 5*l.* 10*s.* at their disposal for the purpose.

That the Committee for providing a large outline Map of the World, consisting of Sir R. I. Murchison, the Lord Bishop of St. Asaph and the Secretaries of the Royal Geographical and Ethnological Societies, be re-appointed, with the addition of Sir James Ross and Dr. R. G. Latham, with 15*l.* at their disposal for the purpose.

Not involving Grants of Money or Application to Government or Public Authorities.

That Lieut.-Col. Portlock, Prof. James Forbes, Mr. Mallet, Mr. Phillips, Dr. Robinson, Col. Sabine, and Prof. Stokes be requested to consider and report upon the best form of apparatus for registering the direction and amount of Earthquake Vibrations.

That Dr. Gladstone be requested to continue his inquiries on the Influence of Light on the Vitality of Plants.

That Mr. Robert Hunt be requested to continue his investigations of the Chemical Action of the Solar Rays.

That the following gentlemen be a Committee to report on the best means of preserving Pyritous and other specimens of Organic remains which are liable to decomposition, viz., J. S. Bowerbank, Esq., Prof. Johnston, J. E. Lee, Esq., H. E. Strickland, Esq.

That Mr. Spence Bate be requested to give a report on the present state of our knowledge of the Lower Forms of British Crustacea.

That Mr. Fairbairn's account of Experimental Researches to determine the Strength of Locomotive Boilers, and the causes which lead to Explosions, be printed, entire, among the Reports.

That the Kew Committee be requested to furnish a Report to the Council, on the Definition of the Boiling Point of Water at present adopted in this Country, for the Thermometric Scale; and that the Council be requested to communicate with the President and Council of the Royal Society, should any change in that respect be deemed desirable.

That Prof. Johnston be requested to furnish a Report on the relations of Chemistry to Geology.

That the following papers, with the consent of the authors, be printed in full in the Transactions of the British Association for the year 1853:—James Oldham, Esq., 'On some of the Physical Features of the Humber;' 'On the Rise, Progress, and Present Position' of Steam Navigation in Hull.' J. P. Bell, Esq., M.D., 'Observations on the Character and Measurements of Degradation of the Yorkshire Coast.'

That Mr. John Frederick Bateman, C.E., F.G.S., be requested to Report on the State of our Knowledge on the Supply of Water to Towns.

That the thanks of the British Association be given to the Parliamentary Committee for the unceasing attention they have paid to the interests of Science, both in communications to Government, and in proceedings in the Houses of Parliament.

The Members of the British Association have learned with satisfaction that it is the intention of Government to direct, that in future, daily Meteorological Observations shall be made at sea, in correspondence with the plan adopted by the Government of the United States, on the suggestion of Lieut. Maury, and to take such further steps, in reference to the Mercantile Marine of Great Britain, as may be best suited to stimulate and encourage the Masters of British Merchant Ships to take interest in investigations by which the times of passage between different ports have already, in many instances, been materially shortened, and which may lead to other results of the greatest importance to practical navigation.

The British Association entirely concurs in the opinion that to make the Observations thus contemplated serviceable for the purposes which they are designed, it will be necessary to make provision for their co-ordination, and for deriving from them the instruction which they may be capable of yielding, primarily for the advantage of navigation, and secondarily, for the benefit of Science.

In this view the General Committee requests that the Council will communicate on the subject with the Parliamentary Committee, and will take such steps, either by deputation to Government or otherwise, as may appear to them desirable.

That Col. Sabine be requested to draw up a Report on the principal magnetic results obtained at the Magnetic Observatories.

Involving Application to Government.

That as great inconvenience is frequently occasioned by the injury or destruction of instruments and specimens, arriving from foreign parts, arising from careless re-packing at the Custom House, it be referred to the Council to consider of the best mode of representing this to the Government, and of remedying the evil.

GENERAL MEETING.

The concluding General Meeting of the Association was held afterwards in the Saloon of the Mechanics' Institute.—The President delivered an address of considerable length, speaking in high terms of approbation of the labours of the Local Committee, and of the whole of the arrangements. The rooms for the Sections had been more than usually convenient. He spoke also very highly of the local papers contributed, and of the public hospitality of the Local Committee and of the Mayor. Intellectually, as in every other respect, this Meeting had been eminently successful.—Mr. W. SMITH, of Jordan Hill, moved, and the MAYOR seconded, a vote of thanks to the President.—Prof. PHILLIPS then gave an account of the Meeting. He was happy to be able to announce that an assertion on which he had ventured in a public meeting at Hull, that this would be a most successful visit, had been fully borne out. The returns made up to three o'clock that day showed that there had been present 141 old life members, 13 new life members, old annual members 59, new 58, of associates 368, of ladies 236 (cheers), and of foreigners 6; making a total of 881. The amount paid by these was 904*l.*, and there had also been 22*l.* received for books. After alluding to some of the arrangements for the excursions, Prof. PHILLIPS presented some copies of a new work published by him, and concluded by paying a high compliment to the local press.—The Meeting then adjourned.

THURSDAY.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

President—The DEAN OF ELY.
Vice-Presidents—Mr. W. R. GROVE, Col. SABINE, Rev. Dr. SCORESBY, Prof. STOKES.
Secretaries—Prof. STEVELLY, Messrs. B. BLAYDES HAWORTH, J. D. SOLLITT, J. WELSH.
Committee—Dr. Andrews, Prof. Boole, Dr. Buist, J. P. Gassiot, Profs. Helmholtz and Hodgkinson, R. Hunt, W. Hopkins, Rev. W. V. Harcourt, W. Lassell, Dr. Lee, E. J. Lowe, Profs. Phillips and Plücker, Capt. Sir J. Ross.

Col. SABINE opened the Section by apologizing for the absence of the President.

'Continuation of Report on Luminous Meteors,' by the Rev. Prof. POWELL.—In the absence of the author, one of the Secretaries read the Report. It commenced by acknowledging, when submitting this sixth Report, the valuable contributions of the same scientific friends who on former occasions so extensively aided the objects of the Association in keeping up this record,—which, it is to be hoped, may eventually prove of some service by the accumulation of facts to illustrate the laws, and thence the causes or origin and nature of these remarkable phenomena. The author expressed his regret that circumstances had heretofore prevented him from entering upon some classification of them, or at least of their perplexing appearances, on which to have founded perhaps some conjectural hint towards their theory;—which, nevertheless, he stated that he looked forward to taking in hand at no distant period. The report contained tabulated records of observed meteors classified under three general heads:—I. Older Observations recorded of Luminous Meteors. II. Continuation of Catalogue of Luminous Meteors from the Report of 1851-2. III. An Appendix, containing letters and drawings, giving a more detailed account of some more Remarkable Meteors. The number of meteors tabulated under the second head was very large. The records were preserved under the following heads:—1. Date; 2. Hour and minute when seen; 3. Appearance or magnitude; 4. Brightness and colour; 5. Train, or sparks; 6. Velocity, or duration; 7. Direction, or altitude; 8. General remarks; 9. Place; 10. Observer; 11. Reference. This report gave rise to a very animated and long-sustained conversation.

Mr. GROVE explained the three opinions ad-

vanced as to the possible origin of these interesting objects. At one time it had been maintained that they were bodies projected upon the earth from the moon;—next, it had been supposed that they had a chemical origin in our own atmosphere;—and lastly, it was held that they were probably planetary bodies, whose orbits traversing that of the earth when they met at a node, the planetary mass falling into our atmosphere ignited and put on one of the varied phases of a meteor. Mr. Grove stated, that the first opinion was now universally abandoned;—that the second, though still claiming supporters, was not considered the most probable;—and that the third opinion was all but universally now received among scientific men as the most probable account of their origin. He fortified each of those statements, giving the leading reasons which led to the rejection or adoption of each.—Mr. VARLEY stated, that from his boyhood he had attended to these perplexing phenomena, and that the conclusion at which he had arrived was, that their origin was chemical, and that they had not that lateral motion which planetary bodies would unquestionably possess. He recollected his attention having been strongly drawn to them when yet a boy by a large one descending nearly perpendicularly towards the earth in front of him, bursting, and the sparkles which fell from it also descending so perpendicularly as to induce him in his boyish eagerness to run forward with outstretched hand to endeavour to catch some of them. If the members would remember the very strong smell which hydrogen gas exhibited when prepared either from iron or from zinc, but especially and very distinguishably from iron,—and that almost every pool in summer was throwing up from its muddy bottom bubbles of carburetted or sulphuretted hydrogen, they would feel small difficulty in admitting that metallic substances might be carried up with those light gases and accumulated in the upper parts of the atmosphere, and at length, influenced by electrical discharges or otherwise, descend to the earth in the form of aerolites. He exemplified the power of lightning discharges to move terrestrial masses, by describing a heavy discharge which he had witnessed in the Park, in London, on one occasion, when he had seen the fire to rise up from the earth to meet the descending lightning, and on going up to the place to examine it, he found the ground all strewed over with a fine deposit of something as if sand had been uniformly sifted over it.—Mr. SOLLITT considered it not improbable that some aerolites were of the nature of planetary masses, across whose paths the earth passed in its yearly course, as described by Mr. Grove,—while others had, as Mr. Varley maintained, an atmospheric and chemical origin. But he thought there was a third source, and that was the vitrification which electrical discharges constantly produced along the earthy substances which they traversed.—Other members joined in the discussion; and the power of bodies containing the metals and metalloids to ignite when they came into the atmosphere of the earth was not forgotten.

'On the Composition and Figuring of the Specula for Reflecting Telescopes,' by Mr. SOLLITT.—The writer commenced by stating that he had given his attention to this subject for years, and that he was more than ever convinced of its importance by the decided conclusion to which facts had led him that reflectors, when once well and carefully made, were far less apt to deteriorate than refractors. In order to be intelligible to the Section, it was necessary for him to go over some ground familiar to the public since the researches of Lord Rosse, Mr. Lassell, and Mr. Nasmyth. He stated that he considered it to be a matter of prime importance that the copper and tin should be used in exact atomic proportions. He, following the numbers given by Berzelius, used the following proportions:—copper, 32; tin, 17·4. Lord Rosse's are, copper, 32; tin, 14·9. As the metal when thus composed was very hard, brittle, and difficult to work, he found that he could render it capable of reflecting white light equally well, if not better, and at the same time of taking a very uniform and beautiful polish, by introducing a little nickel in place of the tin,—and the following proportions he found on trial best:—copper, 32; tin, 15·5; nickel, 2. He also found the introduction of a very small quantity of arsenic useful in preventing the oxidation of the tin when melting. Silver, as used by Mr. Lassell, he also found excellent; but he was against the use of fluxes, as most injurious. The author passed over the casting and grinding with very slight notice; but dwelt on the composition and figuring of the polisher as of great importance. The composition as used by him was pitch and resin, and a small admixture of flour was found useful. The surface he grooved with concentric equidistant circular grooves,—and not in parallel and cross grooves, as used by Lord Rosse and Mr. Lassell. These concentric grooves he crossed by radial grooves, widening as they receded from the centre, so as to be bounded by curved outlines. By giving proper form and dimensions to these curves the parabolic form could be most accurately given to the speculum in the process of polishing. The form of the curved outlines of these radial grooves he found should be parabolic. He concluded by stating the importance of not having the speculum too thin, and of using proper precautions in mounting and supporting it, to avoid any chance of the form being altered.

Dr. SCORESBY regretted that having been in another Section he had not heard the early part of the communication of Mr. Sollitt; but he rather thought Lord Rosse used concentric grooves in his polisher as well as parallel and cross grooves.—Prof. STEVELLY confirmed the accuracy of this statement; and added that his memory was quite clear that Lord Rosse considered it very important to use the copper and tin in atomic proportions, and said in his papers on it that uniformity of composition could not otherwise be hoped for. He also recognized the importance of using thick specula; the last which he had cast being not less than five inches thick. He also had used and recommended resin to be used to harden the pitch and flour for a purpose which by experience he had learnt to be important. Lord Rosse had also by the several motions and adjustments which he had contrived for the speculum and the polisher reduced the figuring of the speculum to an almost certain function of time: so that after the speculum had been a certain number of hours under the action of the polisher, he was well assured that the proper figure had been attained. Prof. Stevelly briefly described these motions and adjustments; and stated that the actual result was, an enormous circular disc of six-feet aperture, without crack or flaw, and of a splendid uniform polish, and reflecting light from objects of a perfectly natural tint.—Mr. VARLEY said he had found that the use of a little zinc in the composition of the speculum metal took from it the liability to tarnish which he had found so annoying. He expressed regret that Lord Rosse found it impossible to avoid microscopic pores in the construction of his speculum; his own experiments had led him to hope they might be avoided.—Mr. LASSELL said, if he had heard Mr. Sollitt correctly, he had said that he used silver in the composition of his speculum metal; now this was a mistake, as he used no silver in its composition. As to the proper proportion of tin to be used with the copper, he believed it to be impossible to give an unvarying rule, as the copper of commerce was very irregular in its quality and purity. He found the best mode to be to add nearly the quantity of tin known to be required,—which generally was from 14 to 15 parts tin to 32 copper; and then, weighing a small portion of that alloy, add to it by slow degrees known weights of tin,—and, assaying it from time to time by the simple test of dropping it into water as soon as it acquired a certain brittleness and brilliancy of fracture, easily to be recognized by practice, then adding in the same proportion to the whole alloy. He did not experience the difficulty from pores which had been alluded to, and he was not aware that Lord Rosse complained of it. His mode of casting most assuredly gave the portion of the speculum which was to be ground and polished free from them.—Mr. VARLEY said, up to a certain proportion of tin the brilliancy and perfection of the reflecting power of the alloy seemed to improve, although its brittleness also increased; but beyond a certain limit the tin did not appear any longer to combine with the alloy,—for he has seen it in the process of cooling squeezed out, as it were, leaving the texture of the alloy spongy.

'On the Surface Temperature, and Great Currents of the North Atlantic and Northern Oceans,' by the Rev. Dr. SCORESBY.—The author commenced by pointing out the great importance to Physical Geography of the subjects which he proposed to discuss, particularly as they tended, in the economy of Nature, to furnish a compensating instrumentality against the extremes of condition to which the fervid action of the vertical sun in the tropical regions, and its inferior and more oblique action in the polar regions, were calculated to reduce the surface of the earth. Our knowledge of all the currents of the ocean, with perhaps one exception, the Gulf-stream, which had been, in its more important features, carefully examined and surveyed, and more especially in the American Coast Survey,—was derived from the comparism by navigators of the actual position of the ship as determined from time to time with its position as calculated from what sailors technically called the "dead reckoning," or the course steered, and the distance run as determined by the log, an instrument by no means perfect. The determination, however, of oceanic currents, to which the present communication referred, depends simply on induction from observation of temperature, and that mainly of the surface. Such observations, indeed, only become available under considerable differences betwixt the mean atmospheric and oceanic temperatures: and where they may seem to indicate the region from which peculiar qualities of the sea are derived, they can afford but little, if any, information as to the precise direction or strength of the current so indicated, yet still the general results are found important and useful. The researches of the author embrace those in the Greenland Sea, the North Sea, and a considerable belt across the North Atlantic. To those in the North Atlantic he wished at present to direct attention; and to a belt of it embraced within the limits of a series of passages chiefly by sailing vessels between England, or some European port, and New York. Of these passages, sixteen in number, four were performed by the author himself, and twelve were supplied by an American navigator, Capt. J. C. Delano, an accurate scientific observer. The observations on Surface Temperature discussed amount to 1153, gathered from a total number of about 1400. Usually Capt. Delano recorded six observations each day during the voyage, at intervals of four hours. Seven of the passages were made in the spring of the year,—two in the summer,—one in autumn,—and three in winter. Taking the middle day of each passage the mean day at sea was found to be May 18th or 19th,—a day fortunately coincident in singular nearness with the probable time of the mean annual oceanic temperature. The author had laid down the tracks of the ship in each of the voyages on a chart of Mercator's projection, and the principal observations on Surface Temperature were marked in their respective places. The observations were then tabulated for meridians of 2° in breadth, from Cape Clear, longitude 10° W., to the eastern point of Long Island, longitude 72° W.,—embracing a belt of the average breadth of 220 miles or a stretch of about 2,600 miles across the Atlantic. The results were the following:—1. Highest Surface Temperature northward of latitude 40°, 74°; lowest 32°; range 39°.—2. Mean Surface Temperature as derived from the means of each meridional section, 56°, whilst the mean atmospheric temperature for the corresponding period was 54°·2.—3. Range of Surface Temperature within each meridional section of 2°, 8½° at the lowest, being in longitude 20–22° W., and at the greatest 36°, being within the meridian of 62–64° W.—4. Up to longitude 40° the Surface Temperature never descended below 50°;—the average lowest of the sixteen meridional sections being 51°·88, and the average range 11°·3.—5. In the succeeding fifteen sections, where the lowest temperature was 32°, the average lowest was 37°·1 and the average range 29°·7. This remarkable difference in the temperature of the eastern and

western halves of the Atlantic passage, the author said was conclusively indicative of great ocean currents yielding a mean depression of the lowest meridional temperature from 51°·88 to 37°·1, or 14°·8, and producing a mean range of the extreme of temperature on the western side of almost thrice the amount of the extremes on the eastern side,—or, more strictly, in the proportion of 29°·7 to 11°·3. The author drew attention to a diagram in which he had laid down along the entire belt curves showing the whole range of the lowest depressions of temperature and highest elevation, with the means at each longitude distinguished by different shading; and pointed out how the inspection of this as well as of the tabulated results affords striking indications of the two great currents, one descending from the Polar, the other ascending from the Tropical regions, with their characteristic changes of cold and heat. In classifying the results, the author considered the entire belt of the Atlantic track of the passages as divided into six divisions of 10° of longitude each, and these into meridional stripes of 2° each, omitting the two first degrees next the European end, or about 80 miles westward of Ireland to 72° W., or about the same distance west of New York. To each of these six divisions he directed attention, pointing out the conclusions to be derived from each. The curves approaching each other and running nearly parallel through the western half with great regularity, showing the variations and range to be much less, while throughout the eastern half the widening of the distance, and the irregular form of the extreme curves showed the influences of the two currents very remarkably. The author then proceeded to draw conclusions, showing that sometimes the cold current from the north plunged beneath the warmer current from the south. Sometimes they divided,—the colder keeping in shore along the American coast, the other keeping out and forming the main Gulf-stream. Sometimes where they met they interlaced in alternating stripes of hot and cold water; sometimes their meeting caused a deflexion,—as, where one branch of the Gulf-stream was sent down to the south-east of Europe and north of Africa, and another branch sent up past the British Islands to Norway and Scandinavia by the Polar current setting down to the east of Newfoundland. The author next proceeded to consider the uses in the economy of nature of these great oceanic currents. The first that he noticed was the equalizing and ameliorating influence which they exercised on the temperature of many countries. Of this he gave several examples. Thus, our own country, though usually spoken of as a very variable climate, was subject to far less variations of range of temperature than many others in similar latitudes,—which was chiefly from the general influence of the northern branch of the Gulf-stream setting up past these islands. He had himself on one occasion in the month of November known the temperature to rise no less than 52° in forty-eight hours,—having previously descended in a very few days through a still greater range; while in these countries the extensive range between mean summer and winter temperature scarcely in any instance exceeds 27°, and in many places does not amount to nearly as much. Another advantage derived from these currents was, a reciprocation of the waters of high and low latitudes,—thus tending to preserve a useful equalizing of the saltness of the waters, which otherwise by evaporation in low latitudes would soon become too salt to perform its intended functions. Next he pointed out their use in forming sand-banks, which became highly beneficial as extensive fields for the maintenance of various species of the finny tribes, as in the great banks of Newfoundland. Next, this commingling of the waters of several regions tended to change and renew from time to time the soil of these banks,—which, like manuring and working our fields, was found to be necessary for preserving these extensive pastures for the fish. Lastly, by bringing down from Polar regions the enormous masses of ice which, under the name of icebergs, were at times found to be setting down towards Tropical regions, they tend at the same time to ameliorate the great heats of those regions, and to prevent the Polar regions from becoming blocked up with accumulating mountains of ice which, but for this provision, would soon be pushed down as extensive glaciers, rendering whole tracts of our temperate zones uninhabitable wilds. Dr. Scoresby concluded by pointing out several meteorological influences of these currents, by causing extensive fogs and winds more or less violent.

'On Dynamical Sequences in Kosmos,' by W. J. M. Waterston.—The Dynamic theory of Heat, if accepted as being inductively demonstrated, seems to supply us with a valuable standard of physical causation that in the course of time must have an important influence on the progress of science. That some such standard has hitherto been wanting, seems to be proved by the barren results of the labours of the most eminent mathematicians when directed to molecular physics, offering as they do so great a contrast to the success achieved in the fields of Astronomy. In these reunions of the British Association it may not perhaps be considered out of place, or as an illegitimate course of inquiry, to assume the theory as proven, and endeavour to realize, as far as our lights at present extend, the conditions and the sequence of action, implied by its existence as a general principle throughout nature. The evidence that supports the theory equally supports many views of natural phenomena that are obviously dependent upon it as corollaries, and which ought therefore to be always associated with it. Among these I would beg attention to a few that seem specially to demand notice at the present stage of our progress.—I. Equilibrium and Sequence of Temperature in relation to a Centripetal Force.—*The dynamic theory of heat requires that the law of vertical equilibrium of temperature should be different from the law of horizontal equilibrium.* In whatever way conduction may be effected, equilibrium of temperature is by the theory equilibrium of force, maintained by a constant interchange of equal action or impulse between adjacent molecules in a state of activity. The interchange may take place by direct contact or through an intermedium affected by and capable of affecting the active state of the molecules. In either case the vertically resolved portion of this active state must be influenced by the centripetal force of the planet which tends to increase a downward impulse and diminish an upward impulse. Thus, the condition of motion once admitted, involves a greater intensity at the lower aspect of a molecular orbit than at its upper, caused by the force of gravitation acting in the interval, which must thus establish a gradient of increasing temperature towards the centre, as the natural condition of a vertical equilibrium. An increasing temperature below the surface of the earth being a recognized fact, it is possible that the condition of permanent equilibrium in our planet is already attained; and if in any mathematical speculations on the interior condition of our globe, we assume that conduction takes place the same in all directions, vertical as well as horizontal, we shall certainly be proceeding on a false assumption if the theory is correct. A vertical gradient of temperature in the atmosphere is another recognized fact impossible to reconcile with any previous theory, but so completely in accordance with these dynamic views, that if we merely assume the molecules of air to be free elastic projectiles, we may deduce its actual numerical value from the specific gravity of the component gases. From this hypothesis, too, all the physical properties of gases may be mathematically deduced. The relation that must subsist between heat and gravitation is extremely interesting, and deserves to be enlarged upon. It is in perfect conformity with the views generally entertained of the progressive formation of the solar system—the nebular hypothesis of La Place. The dynamical sequence may be illustrated as follows. Suppose a 32 lb. cannon ball to descend through the earth's radius under the influence of the same force of gravity as exists at the surface, the velocity acquired is 36,700 feet per second, or about 7 miles. This is the same velocity as the ball would acquire in descending from an infinite height to the surface of the earth. Considering the ball as an aerolite encountering the atmosphere or earth's surface with this velocity, we are now enabled to compute the amount of heat generated by the concussion. 32 lb. of water falling through a height of about 673 feet obtains an increase of 1° by the concussion, 32 lb. of iron about 9°. The concussion due to the velocity of 7 miles per second would generate heat enough to raise the temperature of the ball 280,000 degrees. In the same way it may be computed that if the ball descended to the surface of the sun, it would acquire a velocity of 545 miles per second, and the heat equivalent of the concussion is 1,800 million degrees. We may thus obtain an idea of the vast evolution of heat that might be caused by the process of central aggregation of matter under the influence of its gravitating energy; nor does it seem necessary to look further for the origin or continuance either of the solar heat or for that of the interior of our planet. While gravitation thus generates heat centripetally, radiation may be viewed as the escape of *vis viva* centrifugally. The modes of central collocation and of disperson are equally mysterious: further than that, they appear as parts of a dynamical cycle. While a body is falling towards the sun, *vis viva* is generated in certain points of space, and conveyed to the centre by the body whose molecules move together in the passage downwards. The shock at the centre puts an end to this species of motion, but generates another apparently of a vibratory kind in the molecular elements, which has the effect of awakening a radiating power through space; or what may be viewed as a centrifugal transference of *vis viva* into the regions of space. While this *vis viva* generated in space is inevitably carried to a centre before it is thus re-issued, we have the residual phenomenon of a central body augmented in mass by the process. The physical circle would be complete if this central body had a motion through space which brought it into collision with another; both, it may be, exhausted of their central *vis viva*. The shock might be supposed capable of dispersing and projecting the component part so far from the common centre of gravity as to renew the original nebulous form. In M. Pouillet's researches (Taylor's 'Scient. Mem.' vol. iv.) we have a striking view of the extreme slowness of the process of radiation from the sun. Making use of the same data, and converting the equivalent of solar radiation into quantity of matter of the density of water falling to the sun from remote regions, we may see by a little calculation that the quantity required in one year would cover its whole surface to the depth of 14·6 feet. Thus, the sun may be supplied with heat by the mere descent of matter as aerolites to its surface. When such bodies encounter our atmosphere we have experience of the dazzling appearances of ignition or combustion manifested, and may judge of the effects of a continued shower of such bodies sufficient to cover the surface to a sensible depth. Each meteor signals an accession to the earth's mass, and brings also an accession of heat. If the united mass of all such meteors that impinge on our planet throughout one year were made visible to us as one aerolite descending at regular yearly intervals, there is little doubt it would suggest to the mind of the most careless observer the probability of the earth growing in size by such periodical contributions. The geologist, accustomed to the consideration of vast periods of time, might speculate on the possibility of it having thus materially increased in dimensions while the abode of organic life, without in the least disturbing it. From what is already known, we can predicate that a ball of iron entering the atmosphere with a velocity of six or seven miles a second would instantly be melted, burnt, and converted into a red powder, and that before reaching the earth it would probably be scattered by the aerial currents into comparatively so vast an area as never to be afterwards noticed. If we suppose the mechanical force produced by the condensation of the nebulous mass from which a planet is forming to be slower than the equivalent of radiation from the same, it would seem as if there could be no great internal heat; but it is to be remembered that the vertical law of conduction requires an increase of temperature downwards, so that if a planetary mass were exposed perfectly cold to the

sun's rays, it must continue to absorb heat until that vertical equilibrium of temperature has been attained:—the centripetal energy enabling it to imbibe a quantity of heat vastly greater than the surface temperature would seem to indicate. In respect to extra-terrestrial bodies such subterranean heat is latent. With regard to the sun, on the other hand, the mechanical force generated centripetally must originally have far exceeded the equivalent of radiation. If its present condition is stationary in respect to temperature, its mass must be increasing. If its mass is not increasing, its temperature must be diminishing, the annual loss being represented by about $\frac{1}{31}$ millionth of its mass lowered 1,800 million of degrees, or the whole mass lowered about 33 degrees per annum,—supposing it to have the specific heat of iron: supposing, also, that it does not contract or become further condensed, because this would of itself engender *vis viva*. It may be shown that so small an increase of density as would diminish the sun's diameter 860 feet represents the equivalent of the annual radiation. In the bodies that surround us we remark that cooling and contraction are generally simultaneous. If such is the case in the sun, 33 degrees must be too high an estimate of the yearly loss of temperature. The ratio between the diminution of bulk and of temperature, were it known in the case of the sun, would enable us to compare their mechanical equivalents. The *vis viva* produced by the diminution of bulk would be classed with the phenomena of what is called latent heat in liquids, solids, and gases. It would seem from these computations, which rest upon M. Pouillet's data, that the probable annual loss of temperature in the sun is by no means inconsiderable in absolute amount, but its relative value in respect to the temperature of the sun may be, and probably is, quite insignificant. Is there any way of arriving at an estimate of the temperature of the sun's radiating surface? Let us consider what meaning is to be given to the expression "temperature of space," occasionally to be met with in the writings of physicists. If heat is the motion of the elementary parts of bodies, and not a subtle species of matter, as certain phenomena of latent heat seem to have suggested the idea, it is hardly correct to speak of vacant space as having a temperature, although the heat-force may in various directions and with various intensities be radiating through it. In the same way space is not considered as luminous, although traversed by most intense light. A thermometer placed in a perfect vacuum although it shows the same temperature as the substance that incloses the vacuum, actually exhibits the effects of the intensity of the heat radiations that are passing through it. If we suppose a thermometer situated at the opposite point of the earth's orbit, and subject to the influence of the sun's rays only, it would no doubt rise until the radiation from its surface amounted to what was radiated into its surface; but the temperature indicated by it cannot be accepted either as constant, for it depends on the specific radiating and absorbing qualities of the thermometer; or as affording the means of deducing the sun's temperature, for we are ignorant of the relation between temperature and rate of emission, also of the absolute value of any given temperature unless we deduce it from the dynamic theory of gases which represents the zero of gaseous tension (−461° Fahr.) as the absolute zero of heat. If the thermometer thus isolated is supposed to be surrounded, on all sides but the one exposed to the sun, by matter that is kept artificially heated up to within a few degrees of the temperature shown by the thermometer, it is impossible that it could receive an accession of heat from any other source but the sun; and it seems obvious that when at last it became stationary, the temperature is one that must be independent of any specific quality of the thermometer or its artificially heated envelope, but dependent entirely on the distance and temperature of the sun.—Some years ago I made an attempt to imitate the conditions of this hypothetical experiment by inclosing a thermometer within three concentric boxes well protected from external influences and capable of being equally heated all round to any temperature below 400° Fahr. by means of flues ascending from an Argand lamp. The rays of the sun when near the meridian (within the Tropics) were admitted to fall when required on the bulb of a thermometer through a triple glass partition. Before applying the lamp, the temperature of the interior of the box being t, a rise of about 50° took place by exposing the bulb to the sun; when the thermometer had become stationary at $t + 50°$ the sun's rays were excluded and the lamp applied to heat the box to $t + 50°$. When the temperature was again stationary at this point the sun was re-admitted upon the thermometer, which again rose 50° or until the temperature was $t + 100°$. The same operations were repeated up to 250°, but without any diminution of the step 50°, which seemed to be made with the same alacrity at the higher as at the lower temperature. I had hoped to have detected some very obvious difference, and from its amount to infer the value of the limiting temperature that expressed the sun's power at the earth's distance. I should then have added 46°, to this temperature to obtain its absolute value, then increase this in the inverse ratio of the square of the distance from the sun's centre, obtain an approximate value of the sun's temperature. It seemed to me at the time that this experiment, though not made with sufficient means, or perhaps care, to insure much accuracy, proved that the intrinsic force of the sun's rays of heat was much greater than might be inferred from the temperature of the atmosphere.—I purpose at a future opportunity to consider the Dynamical Sequence of Latent Heat and Molecular Force.

Mr. Hopkins addressed the Section, pointing out the important hints and valuable lines of inquiry which the paper suggested; but also showing with what caution it was to be received in many parts as statements of determined scientific truth.

Section B.—Chemical Science.

President—J. F. W. Johnston.
Vice-Presidents—Dr. Faraday, Rev. W. Vernon Harcourt, Dr. Andrews, Dr. Daubeny, J. P. Gassiot.
Secretaries—Prof. R. Hunt, T. J. Pearsall, H. S. Blundell.
Committee—W. G. Beadle, H. Blundell, A. Claudet, Dr. Cooper, Rev. T. Exley, Dr. Francis, A. W. Gadesden, G. Gladstone, Dr. Gladstone, W. R. Grove, G. Lowe, Dr. Price, Rev. Dr. Scoresby, Dr. Scoffern, J. D. Sollitt, W. S. Ward.

'On the Chemical Action of the Solar Radiations,' by Mr. R. Hunt.—This was a report to the Section of the continuation of an examination of the chemical action of the rays of the prismatic spectrum, after it had been subjected to the absorptive influences of different coloured media. The mode of examination adopted has been to obtain well-defined spectra of a beam of light passing through a fine vertical slit in a steel plate by prisms of flint and crown glass and of quartz. The spectrum, being concentrated by a lens, was received upon a white tablet and submitted to careful admeasurement; the coloured screen (sometimes coloured glass and sometimes coloured fluid) was then interposed, and the alterations in the chromatic image were carefully noted; the chemical preparation was then placed upon the tablet, and the chemical impression obtained. The relation which this image bore to the luminous image was a true representation of the connexion between the colour of a ray and its power to produce chemical change. In the report made to the Belfast Meeting of the British Association the results of experiments made upon glass tablets prepared by the so-called collodion process were alone given. In the present report the examination has been extended to the photographic preparation known as the calotype, and to iodide and bromide of silver in their pure states and when excited by gallic acid. M. Edmond Becquerel, in a paper communicated to the Academy of Sciences, of which an abstract appears in the *Comptes Rendus*, tom. xvii. p. 883, states "that when any part of the luminous spectrum is absorbed or destroyed by any substance whatever, the part of the chemical rays of the same refrangibility is equally destroyed." The author's experiments, as recorded in the former report and those now detailed, prove that this conclusion has been formed too hastily. Although there are many absorptive media which, at the same time as they obliterate a particular coloured ray, destroy the chemical action of that portion of the spectrum, yet there are a still more extensive series which prevent the passage of a ray of given refrangibility, and do not, at the same time, obstruct those rays which are chemically active of the same degree of refrangibility. This is particularly exemplified in the case of glasses coloured yellow by different preparations. With some of these the blue rays are obliterated, the chemical action of this part of the spectrum not being interrupted, whereas in some other examples those rays permeate the glass, but are almost entirely deprived of chemical power. A still more curious fact is noticed in this report, for the first time, of some media which have the power, as it were, of developing chemical action in a particular part of the spectrum where the rays did not appear previously to possess this power. Several glasses exhibited this phenomenon to a certain extent, particularly such as were stained yellow by the oxide of silver; but one glass showed this in a remarkable manner. This glass was yellow when viewed by transmitted light, but it reflected pale blue light from one of its surfaces; it obliterated the more refrangible rays down to the green, and rendered the yellow rays far less luminous than usual. In nearly every case the yellow rays are found to be not merely inactive, chemically, but to actively prevent chemical action. After the spectrum has been submitted to the action of this glass, *all chemical power is confined to this yellow ray*. The author has hitherto supported the view that photographic phenomena and the illuminating power of the sunbeam were distinct principles, united only in their modes of motion. He was led to this from observing that where there was the most light there was the least power of producing chemical change; and that as illuminating power diminished, the chemical phenomena of the solar rays increased. The results, however, which he has obtained during the brief sunshine of the present summer, leads him to hold that opinion in suspension. In many of the spectra obtained (copies of which will be appended to the printed report) there appears to be evidence of the conversion of one form of force into another—the change, indeed, of *light* into *actinism* or chemical power; and, again, as in Mr. Stokes's experiments, the exhibition of the ordinarily invisible chemical rays in the form of *light*.

Prof. Stokes offered some remarks upon the different effects produced by the spectrum, dividing them into luminous effect, chemical action, calorific power, phosphorescence, and fluorescence. These were different effects resulting from the same cause, and he did not consider that sufficient evidence had yet been given to warrant the idea that there existed any dissimilar agencies in the solar rays.—Prof. Johnston, the Rev. V. Harcourt, Dr. Daubeny, Mr. Claudet, and others, took part in the conversation which followed.

'On the Employment of the higher Sulphides of Calcium as a Means of Preventing and Destroying the Oïdium Tuckeri, or Grape Disease,' by Dr. Astley P. Price.—Of the many substances which have been employed to arrest the devastating effects of this disease, none appear to have been so pre-eminently successful as sulphur, whether employed in the state of powder or flowers of sulphur, or by sublimation in houses so affected. Notwithstanding the several methods described for its application to the vines, I am not aware that any had been offered in 1851, when these experiments were instituted, by which sulphur might be uniformly distributed over the branches, and be there deposited in such a manner as to be to some extent firmly attached to the vine. Three houses at Margate, in the vicinity of the one in which the disease first made its appearance in England, having been for the space of five years infected with the disease, and notwithstanding the employment of sulphur as powdered and flowers of sulphur, no abatement in its ravages could be discovered,—I was induced to employ a solution of pentasulphide of calcium, a solution of which having been found to act in no way injuriously to the young and delicate shoots of several plants, was applied to the juices in a dilute condition; the object in view being that the compound should be decomposed by carbonic acid, and that the excess of sulphur should be deposited with the carbonate of lime in a uniform and durable covering on the stems and branches of the vines. This was adopted,

and although but few applications were made, the stems became coated with a deposit of sulphur, and the disease gradually but effectually diminished, in so much that the houses are now entirely free from any trace of disease or symptoms of infection. The young shoots are in no way injured by its application, and the older wood covered with this deposit of sulphur continues exceedingly healthy. This was, we believe, the first employment of the higher sulphides of calcium as a vehicle for the application of sulphur to the stems and foliage of diseased vines. Specimens were exhibited from vines which in 1851 were covered with disease, and which have since the autumn of that year received no further treatment. The vines in the immediate neighbourhood, and adjoining one of the houses, are covered with the disease, but, notwithstanding their close proximity, no indication of the disease has at present been detected in either of the three houses.

'On the Effect of Sulphate of Lime upon Vegetable Substances,' by Chevalier CLAUSSEN.—About six weeks since I was engaged in making various experiments on the effect of sulphate of lime upon vegetable substances. A portion of the substances then used by me was thrown carelessly aside, and upon returning to my experiments about a fortnight afterwards, I was surprised to find that decomposition had not taken place in those portions of the vegetables which had been subjected to the action of the sulphate, while those which had not been so treated were completely decayed. Among the articles experimented upon were a number of potatoes, each of which was affected by the prevalent disease; some of these remain sound to the present day, the others have some time since completely rotted away. Subsequently, I procured some more potatoes, and also some beet-roots, the former being, as far as I could judge, all diseased. I divided the potatoes into three portions. One lot I placed in a vessel with a weak solution of sulphuric acid, and from thence I placed them in a solution of weak lime-water. In the second lot the process was reversed, that is to say, the potatoes were first placed in the lime-water, and then in the acid. The third lot was left untouched. Ten days afterwards I examined the potatoes, and found, as I expected, that the potatoes which had not been treated with the sulphate were rapidly decaying,—those which had been first placed in the solution of lime and then in the acid were more nearly decomposed,—while those which had been treated in the mode first described remained as sound as when first taken in hand. Upon being cut open the diseased part of the potatoes was not found to have spread internally, and the flavour of the root was in no degree affected by the application of the process, nor do I think that its germinating power was injured by the effect of the sulphate. The effect upon the beet-roots was similar to that produced upon the potatoes, and which would seem to be somewhat analogous to that of galvanizing metals, viz. protecting the substances from the effect of atmospheric agencies. I may add, that muriatic and other acids have been employed by me on other occasions with equal success, the only agents required appearing to be those which will most readily produce a sulphate in contact with the substances required to be preserved. As at present it does not appear that any means can be successfully adopted to prevent the potato from becoming diseased while in the ground and arriving at maturity, it would certainly be of immense advantage if anything could be discovered by the use of which the roots when taken up could be prevented from that absolute decay and irreparable loss to which potatoes affected by the disease are liable. The results which I have described seem to me to point to the possibility of arresting this loss. How far the plan suggested may be practicable or applicable upon a large scale, my present very pressing and numerous engagements have hitherto prevented me from ascertaining. I do not think that any insuperable difficulty exists with respect to the application of the process. The acid employed by me was very weak, about one part to two hundred of water; the lime-water was about the consistency of milk. The materials are not, therefore, expensive; and when the value of the crop to be saved is taken into consideration, it would be a matter well worthy of being tested by some of those extensive growers of potatoes in the county in which the British Association is now holding its sittings. For my own part, I should be most happy if by any suggestion of mine I had merely been the instrument of directing the attention of scientific men to the subject of the possibility of preserving from total destruction a vegetable so valuable and so indispensable as the potato.

'On Crystals from the Sea-Coast of Africa,' by J. PEARSALL.—The crystals here shown were obtained by Capt. Mitchell, of the merchant-ship Frankfield, while searching the coast of Africa, between Saldanha Bay and the island of Ichaboe, for guano deposits. The crystals are of carbonate of lime, inclosing sand; 15 to 20 per cent. of sand is obtained from some specimens. The crystals are very hard, and have sharp cutting edges, so as to make it a painful task to walk upon them. The beach was covered with crystals to the extent of miles; about three miles was walked over, but it seemed as far as the eye could reach, and was one-half to one mile in breadth. Some of the specimens are from four to five inches in length, and with surfaces showing a thickness of half an inch, and from two to three inches across the plane. The report given was that some of the crystals protruded up from the sands so far as to wound the ankles and legs without great care in walking over. Some crystals seem to be opaque, with the sand inclosed except at the edges; 15 to 20 per cent. of sand is obtained from portions of crystals. Carbonate of lime and magnesia, with small quantities of saline matter, common salt principally, can be obtained by breaking them up in distilled water. They are entirely soluble in diluted nitric acid. Mineralogists and chemists are perfectly well aware of the stony substance called Fontainebleau sandstone, where the sandstone is found having forms of crystals of carbonate of lime. The crystals now exhibited show the grains of sand of the beach inclosed, without altering the general form, and also that the crystal has at its base adapted itself to the sand and other crystals. These specimens show the great facility on that coast of producing mineralized crystals; and also show the opportunities that are constantly offered to intelligent merchant-seamen of bringing home specimens of great interest which are uncommon in most parts of the world except in some places where they may visit, and where these may be in abundance.

'On the Chemical Constitution of the Humber Deposits,' by J. D. SOLLITT.

FRIDAY.

This morning was devoted to Photography; the Section having requested Prof. R. Hunt and Mr. Claudet to arrange the means of exemplifying all the processes at present employed. By the aid of the local photographic artists, this was accomplished in as satisfactory a manner as the suddenness of the occasion would admit of. Mr. Hunt explained all the processes on paper and on glass,—while Mr. Claudet exhibited the manipulatory details of the daguerreotype. A great number of very beautiful specimens of the art were exhibited. Two views in particular, executed by Messrs. Ross and Thomson, of Edinburgh, of an unusually large size, were most remarkable for the perfection of every part. There was not anything new given in the discoveries or elicited in the discussion which ensued; but, from the crowded state of the Section, it appeared to excite much interest to the end.

The Rev. T. EXLEY read a paper 'On the Cause of the Transmission of Electricity along Conductors generally, and particularly as applied to the Electric Telegraph.'

Prof. ANDREWS described a simple instrument for graduating glass tubes. The divisions admit of being varied in length to the $\frac{1}{1760}$th of an inch.

'On the Origin and Composition of a Mineral called Rotten-Stone,' by Prof. JOHNSTON.—After having stated the district—the Great Fin, Derbyshire—in which the mineral was found, the Professor went on to describe its chemical character and affinity. He observed that its component parts were not of a constant character, as had been asserted in some mineralogical works. Its origin was stated by Phillips to be from the decomposition of the slate rocks of Derbyshire. When examined under the microscope it did not exhibit any organisms, but there were particles or bundles of some substance resembling the bituminous substances found near Castleford. Rotten stone was found in lumps of all shapes and sizes, at depths varying from two to six feet below the surface of the earth. It was his (the Professor's) opinion that the rotten-stone was not the result of the decomposition of the shale of Derbyshire, but of the veins of black marble of the country, which had undergone a great change. In proof of this assertion, he produced specimens which he found to be black marble, with the merest coating of rotten-stone on them, whilst others were half rotten-stone and half black marble. The decomposition had been effected by dissolving the lime out of the rock, and not the rotting of the strata. This substance can be produced by dissolving the lime out of limestone, by bringing weak acids to bear upon it. This proved that there must necessarily exist in the soil some acid which dissolves the lime with which it comes in contact. Farmers would, therefore, see the necessity of adding lime to their land from time to time, because the lime kept continually washing away by the waters of heaven falling on it and extracting from the rotting roots of the earth an acid which had a powerful effect, not only on lime but on other mineralogical structures as well. Prof. Johnston then, at considerable length, entered upon a disquisition of the subject of the recent discovery of the greenstone rocks and the phosphoric acid which abounded in some districts.

Dr. DAUBENY thought the Professor's opinion as to the origin of rotten-stone and the cause of the decomposition of the limestone, was highly correct. He thought the phosphoric acid was owing to the action of carbonic acid gas, generated in the earth, upon the lime of animal substances.—Mr. C. VARLEY was of opinion that the various animals feeding in the districts in which the phosphoric acid was found, took it into their bodies in their food, and as they could not exist without phosphorus, they retained a certain portion and evacuated the rest.—Mr. H. S. BLUNDELL said, attempts without end had been made to obtain rotten-stone equal to the natural production, but they had proved entirely abortive. He always understood rotten-stone to be an aluminous substance, and not one of the nature of black marble, but he thought rotten-stone had now been proved to be owing to the decomposition of the limestone.—Prof. JOHNSTON said, thousands of gallons of muriatic acid rolled yearly down the Tyne, and no doubt it could be turned to good account in manufacturing rotten-stone from marble, which might be procured from Derbyshire.—Mr. BLUNDELL said, that in the event of such an establishment he would support it heartily.

THURSDAY.

SECTION C.—GEOLOGY AND PHYSICAL GEOGRAPHY.

President—Prof. SEDGWICK.
Vice-Presidents—J. SMITH, H. E. STRICKLAND.
Secretaries—Prof. HARKNESS, W. H. DYKES, W. LAWTON.
Committee—Dr. J. P. Bell, E. W. Binney, Dr. Black, J. S. Bowerbank, J. Brown, J. Calvert, E. Charlesworth, Sir W. Jardine, Prof. Johnston, G. G. Kemp, J. E. Lee, J. Oldham, Dr. A. Price, D. Page, J. P. Teale, T. Thompson, Dr. W. Thomson, C. Twamley.

'On some of the Physical Features of the Humber,' by J. OLDHAM.—The Humber was described as a tidal estuary 40 miles in length, the first 30 miles having an average breadth of 2 miles, the lower part of 6 miles,—the whole covering an area of 80,000 acres. Although encumbered with shoals and sand-banks, it has a main channel available for ships of the largest size, the average depth below Hull being from 10 to 4 fathoms, at low-water spring-tides; above Hull its depth is only from 1 to 4 fathoms. The average rise of the spring tides is 22 feet, of the neap tides 15 feet; the former have a velocity of 4 to 5 knots, the latter of 2½ to 3 knots per hour. The water is extremely turbid. The shores of the Humber are composed of alluvial clay, silt, and gravel, except for a small space near the head of the estuary, where lias, oolite, and chalk occur. The alluvial deposits extend several miles inland, and their level does not exceed that of the average rise of the tides. The cutting of large drains has shown the alluvium to

consist of the ordinary silt of the Humber. Some of the land in the vale is even lower than the level of the river, such as the caves of Sutton and Waghen, where considerable forests of yews and other trees have been found buried beneath the peat. Great changes formerly occurred and are still taking place along all the shores of the Humber; large tracts, now reclaimed, were formerly occupied by the estuary, whilst in other parts the channel has become wider, even in the memory of living witnesses. In the upper part of the Humber islands and banks of hundreds of acres were formed in a few months and then as rapidly removed. The whole line of the Lincolnshire coast of the river is liable to these changes, except where protected by engineering works. At the mouth of the Humber, the principal loss is taking place at the neck of land which unites Spurn Head with Kilnsea—a barrier of the utmost importance to navigation. The most interesting tract of land recovered from the estuary is that known as Sunk Island, on the Yorkshire side of the Humber, below Hull, which has a coast line of about 6½ miles, and contains about 7,800 acres. In the time of Charles the First it was really a small island, containing only 7 acres, and lying 1½ mile from the shore, with a channel between it and the land, through which large ships could pass. In 1668 it consisted of 3,500 acres of land, over which the tide generally flowed, but only 7 acres were yet embanked; it was then leased by the Crown, at a rent of 5*l.* per annum. In 1744 as much as 1,500 acres had been embanked, a quantity which was not increased till after 1802, when there was reported to be 2,700 acres fit for the purpose; a new lease was then granted for thirty-one years, at a rent of 700*l.* In 1833 the land under cultivation amounted to 2,900 acres; and in 1850 further embankments were made of nearly 700 acres, with a prospect of still further increase. In the case of Sunk Island, the new land has not been gained by "warping," but only by embanking tracts formed by the river and already covered with a green carpet of grass. If inclosed at an earlier period it is much longer in becoming fertile. Embankments have also been made at Cherry Cob-Sand, and other places, amounting altogether to about 10,000 acres. Mr. Oldham stated that the material of this new land had been derived from the Holderness coast; it was brought in by the flood tide, and deposited at high water, whilst the river was in a quiescent state.

'Notices and Observations on the Humber,' by T. THOMPSON.—This communication being very similar to the preceding, the author only mentioned a few additional particulars. Amongst the recent changes in the Humber, he said that the tides formerly reached Cottingham, four miles further than at present. A curious circumstance had been noticed at Alkbury, near the confluence of the Trent and Humber: previous to 1806 the church at Alkbury could not be seen from the river, but since that year it had become gradually more and more visible beyond the hill. The frequency and rapidity of the changes in the upper part of the Humber were illustrated by the fact that steam-vessels going up by one channel might be obliged on the following day to return by another, and that sounding-poles were used on both sides to ascertain the depth as they proceeded. The sudden removals of the banks often disclosed wrecks. An instance of the former encroachments of the river was afforded by the borough of Ravenspurn, which was chartered at the same time with Hull, and sent members to Parliament in the reigns of the three Edwards; in the time of Henry the Sixth the inhabitants complained of their difficulties, and the town was ultimately abandoned, but of the precise time and manner of its destruction no record exists. Mr. Thompson was of opinion that the warp from the Holderness coast was chiefly carried out to sea, and that the growth of land in one part of the Humber was not greater than its waste in other parts; so that there was a change rather than a positive gain.

Mr. TURNER stated that the tide from the coast of Holderness did undoubtedly sweep round Spurn Head and up the Humber, bringing with it great quantities of mud. It was also the fact that the ebb tide of the Humber brought down mud to mingle with that from the coast, and the two were deposited together at high tide. The excess of waste over deposit was seen in the turbid condition of the current by which it was borne out into the sea.—Prof. PHILLIPS thought that the annual waste on the coast of Holderness was the chief source of the sediment suspended in the waters of the Humber. The quantity brought down by the river and its tributaries was comparatively small, and must be chiefly arrested in the upper part of the valley. With reference to the buried forests below high-water mark, he stated that they consisted chiefly of oak and yew and hazel; the occurrence of cedar (referred to by Mr. Oldham) was very suspicious, only one piece had been found, and that was a mere stick, without root or branches. It was not necessary to suppose that these forests had grown on elevated grounds, for although the yew was frequent on limestone and chalk hills, he had seen aboriginal yew-trees growing in a bog near Doncaster. The apparent subsidence of Alkbury Hill, mentioned by Mr. Thompson, might be real, as it was no uncommon occurrence for hills on the lias to slide, owing to the action of water at their bases.

'On the Waste of the Holderness Coast,' by G. G. KEMP.—The writer computed the actual waste on this coast at from 1½ to 4 yards per annum, the amount varying with the conditions of the shore and the direction of the currents. The average loss of land amounted to 33 acres annually; whilst the destruction of public and private roads, houses, and churches, was not less injurious. The causes of the waste are, the action of frost and rain producing falls of the cliff, and the agency of the sea in removing the beach and making hollows at the bases of the cliffs. To these was added another, —viz., the removal of the shingle for ballast, mending roads, paving streets, building walls, and a variety of other purposes. At Hornsea, 500 tons of beach had been removed in a week, and near Spurn Point 1,000 tons had been taken in a day. The floor of the beach was thus lowered, and the natural defence of the coast removed. Mr. Kemp urgently recommended that a grant should be obtained from Government to repair the breaches which the sea had made, and that the removal of the shingle should be absolutely prohibited.

Capt. CATOR, the Coast Surveyor, stated that he had recommended the prevention of the removal of the beach.—Prof. PHILLIPS also strongly advised the maintenance of the beach as a natural breakwater, and referred to the successful operations of his uncle, Dr. W. Smith, in Norfolk, where the sea breaches, a few miles north of Yarmouth, had been stopped with pebbles and sand, over which the sea-reed and other grasses had grown and formed a permanent embankment.

'On the Character and Measurements of Degradation of the Yorkshire Coast,' by Dr. J. P. BELL. —The author stated his belief that the waste of this coast had been going on from a period long antecedent to any traditional or written history. Amongst the towns and villages known to have been destroyed by the encroachments of the sea, were Auburn, Hartburn and Hyde; Camden also mentioned Pennismerk and Upsal, to which Owthorne must now be added. The ancient church of Withernsea and the church of Kilnsea had been washed away. The whole of the Yorkshire coast, south of Flamborough Head, was subject to waste, but the rate was not uniform, being influenced by the height and composition of the cliffs, the set of the tide, and other causes. Tuke's Map of Holderness afforded some data for estimating the waste since 1786, and the author had been furnished with measurements made in 1836 by the late Mr. G. Milner, and in the present month by Mr. J. Malam. The Cross at Atwick, in 1786, was 946 yards from the edge of the cliff; in December 1836 it was 814 yards distant, and it is now only 770 yards; showing an average annual loss of 2½ yards. The east end of Hornsea Church, in 1786, was distant from the sea 1,133 yards; in 1836 it was 1,000 yards from high-water mark, and is now but 942 yards distant; so that the average loss had increased in the last seventeen years from 8 feet to 3½ yards per annum. Aldborough Church, in 1786, was 2,044 yards from the sea; it is now 1,910; making a loss of 2 yards annually. Tunstall Church in 1786 was 924 yards from the cliff; its present distance has not been measured. Holmpton Church in 1786 was 1,200 yards from the sea, and is now 1,120 yards distant. The most rapid loss is now going on at Kilnsea; the church fell in 1826, and the village is fast disappearing; the Blue Bell Inn, built in 1847, was 534 yards from the sea, but is now only 488 yards, showing an annual loss of more than 7½ yards. The average loss along the forty miles of coast amounts annually to about 2¼ yards. The waste is smallest at Holmpton, owing to the concave form of the coast, and the height of the cliffs, which by their fall protect the base from the action of the sea.

'On the Remains of the Hippopotamus, found in the Aire Valley Deposit, near Leeds,' by H. DENNY.—The bones exhibited were obtained from the brick-field at Wortley, near Leeds, and consisted of a large humerus, an ulna and radius, and numerous portions of the skull and jaws, teeth, tusks, &c. They belonged to three individuals; two adults of different size, and a third younger animal, judging by the smooth and pointed canines and the separate epiphyses of the bones. They appeared not to have been drifted from a distance, but to have belonged to animals which lived and died on the spot: one of the skeletons was entire when first discovered, resting on its side, with the bones in their natural position. The clay in which the bones were found is part of a local deposit, consisting sometimes of sand and gravel formed from the neighbouring rocks of millstone grit; it is from ten to twenty feet deep, and ceases at a height of about ninety-five feet above the present level of the river. It contains trees and hazel-nuts, and remains of the red deer, horse, pig and goat. A few remains of the elephant had been found lower down in the same valley, but they were broken and waterworn.

Prof. PHILLIPS referred to two pieces of pottery alleged by the brickmakers to have been found with the bones; one of these was of a different colour from the clay, and the other was a glazed fragment, apparently of very modern date.—Mr. H. E. STRICKLAND referred to other valley deposits in which remains of the hippopotamus occur, and stated his belief that although more ancient than the historic period, they belonged to the most modern geological age,—to a time subsequent to the glacial period, and after the river valleys had assumed their present form.

'On the Comparative Richness of Auriferous Quartz extracted at different Depths from the same Lode,' by Dr. J. BLAKE.—The writer stated, that no shaft had yet been made in California deep enough to test the correctness of the opinion that auriferous lodes diminish in value as they descend, but he described a circumstance which seemed to confirm that view. A horizontal mass of auriferous quartz was discovered in Grass Valley, which measured 60 yards by 45, and was from 6 to 18 inches thick; in the centre it was depressed 10 yards below the surface, its edges cropping out all round. Every part of this mass had been removed, and was found to contain 1 oz. or 1½ oz. of gold to the ton; some part was extremely rich, affording 60 oz. to the ton. No continuation of this quartz vein could be found in the valley or surrounding hills, but at some distance above a similar vein occurred in which the proportion of gold was much smaller. In another locality a more than average amount of gold had been obtained from a lode which appeared to have been the upper part of a vein. The writer had never heard of "nuggets" being found in mining operations.

Mr. STRICKLAND stated, that it was a popular opinion with the Siberian miners that auriferous veins were richest near the surface; but this was not the case with other metals, nor had any reason been assigned for the belief. The materials in mineral veins had been deposited by chemical action from water flowing through them, and probably rising up from great internal depths. He suggested, that the diminution of temperature or of pressure near the surface might have caused a greater deposition of gold in the upper part of the veins.—Prof. HARKNESS remarked, that lead veins

in Scotland were as rich low down as in the upper part.

SECTION D.—ZOOLOGY AND BOTANY, INCLUDING PHYSIOLOGY.

President—C. C. BABINGTON.
Vice-Presidents—Dr. G. A. W. ARNOTT, Sir W. JARDINE.
Secretaries—Dr. E. LANKESTER, R. HARRISON, H. MUNROE.
Committee—T. Allis, Prof. G. J. Allman, Prof. Balfour, Dr. Camps, J. Clark, Dr. Dickinson, J. Gould, J. Hogg, Dr. Horner, R. M'Andrew, D. W. Mitchell, Rev. F. O. Morris, J. Phillips, Dr. Redfern, L. Reeve, Capt. Sir J. C. Ross, W. Spence, jun., A. Strickland, H. E. Strickland, W. Spence, T. P. Teale, Prof. W. Thomson, R. Wigham.

'Notices of some Living Aquatic Birds at Santry House, near Dublin,' by W. C. DOMVILLE.—This paper consisted of a list of birds,—also of those which were desiderata in the collection.

Mr. ALLIS, of York, observed that the collection contained no birds of great rarity.

'On some Discoveries relative to the Chick in Ovo, and its Liberation from the Shell,' by Dr. HORNER.

'Notice of the Reproduction of the Lower Extremities in a Warm-Blooded Animal,' by Mr. ALLIS.—The case was that of a common song thrush. In November 1851, it moulted, and had every appearance of dying; was reduced to a skeleton and unable to walk; it lay on its back for six weeks, being fed by hand with raw beef, and occasionally with beef-tea and biscuit; early in 1852 an unusual protuberance appeared at the bottom and in front of the tibia above the ankle joint; from these protuberances perfect tarsi and toes were developed, which came to maturity in about three weeks; this annoyed the bird greatly, and he destroyed the newly-formed members with his beak and by friction on the perch. He moulted again in September, 1852, and in November he lost his original tarsi, and new ones were produced; in January last fresh tarsi were again produced; these displaced those formed in November from articulation with the tibia, and the displaced tarsi are now visibly located on the upper edge of those produced in January last, which latter differ greatly from the normal form, being larger and flatter, and bearing a resemblance to the tarsi of aquatic birds; they have feeble though perfectly developed toes, which are sufficient for the purpose of locomotion, and to enable the bird to perch. The living bird, showing the one pair of tarsi overlying these subsequently produced, was exhibited to the Section by Mr. R. Cook, of York, its owner.

Mr. A. STRICKLAND referred to an instance of additional feet growing from the fetlocks of a mare.—Prof. ALLMAN referred to the well-known fact of persons with supernumerary fingers as analogous to this case.—Dr. REDFERN regarded the production not as an extra limb, but as a substitute for one that was lost.—Dr. LANKESTER pointed out the fact of its occurring after a diseased condition as placing the feet in quite a different relation to the cases related,—which were congenital, and not a new or acquired organic action.

'On the Utricular Structure of the Endochrome in a Species of Conferva,' by Prof. ALLMAN.—The plant which constituted the subject of the communication, is closely allied to *Conferva linum*, and the author showed that the deep green endochrome, when liberated from the cell, is seen to possess a very definite utricular structure. Each utricle is filled with homogeneous green matter, which surrounds one or more peculiarly formed starch granules. In many instances, utricles were met with of a large size, and filled with a brood of secondary utricles, each containing homogeneous green contents, surrounding a nucleus-like starch granule.

A long discussion followed the reading of this Paper—which ultimately turned upon the distinctions existing between the animal and the vegetable kingdoms. Dr. REDFERN dwelt on the importance of recognizing the function of cell contents, as well as of cell-walls. Physiologists were too prone to recognize the cell-wall, to the exclusion of what it contained.—Dr. WALKER ARNOTT stated that he had recently heard that starch had been found in the Medusæ. If this were the case, the existence of starch could be no longer claimed as characteristic of the vegetable kingdom.—Prof. ALLMAN agreed with Dr. LANKESTER that the best expression to be found for animal and vegetable life at present was, the general fact of vegetable tissue giving off oxygen gas, and absorbing carbonic acid, whilst animal tissue absorbed oxygen and gave off carbonic acid.

FRIDAY.

'On the Morphology of the Pycnogonidæ, and Remarks on the Developement of the Ova in some Species of Isopodous and Amphipodous Crustacea,' by SPENCE BATE.—The paper was read by Dr. Lankester, who also exhibited a series of drawings, made by Mr. Bate, of the more minute forms of Crustacea, and stated that the Committee had requested Mr. Bate to draw up a report on the present state of our knowledge of the lower forms of Crustacea, which would, he hoped, be presented at the next Meeting of the Association. He also expressed a wish from Mr. Bate to have sent to him any specimens or information that might be in the possession of naturalists in other parts of the country.

Prof. ALLMAN drew attention to the analogies between the conditions of developement in the Crustacea and Arachnida. Mr. Bate found but six legs amongst these lower Crustacea, and this was the case with some forms of Arachnida, more especially the Acaridæ.

Mr. J. D. SOLLITT read a paper, prepared by himself, in conjunction with Mr. R. Harrison, 'On the Diatomaceæ found in the Vicinity of Hull,' showing that the freshwater and marine Diatomaceæ were exceedingly numerous in this locality; the beauty of the varied forms of which were such as to delight the microscopist, and, at the same time, some of them are highly useful as forming that class of *test objects* for microscopes which are the best calculated of all others for determining the excellence and powers of object glasses. As test objects they were first discovered by the Hull microscopists,—and have now been adopted as such by all the microscopists not only in this but in all other countries. Mr. Harrison and Mr. Sollitt discovered the markings on those delicate siliceous coverings as early as 1841. It was shown that the markings on those shells were so fine as to range between 34,000 to 130,000 to the inch; the *Plurosigma strigilis* being the strongest marked, and the *Navicula Acus* the finest. It was afterwards pointed out that a large bed of fossil freshwater Diatomaceæ, of at least two feet in thickness, had been discovered in Holderness,—and that in a submerged forest on the coast of Holderness numbers of fossil freshwater Diatomaceæ had been discovered, although the sea flows over the part at every tide.—The paper concluded by pointing out that, at least and upwards of 150 species of marine and freshwater Diatomaceæ had been identified in the neighbourhood of Hull.

The reading of this paper was followed by a long discussion. First, in relation to the microscopic powers and the structure of the instruments employed by the Hull observers. Secondly, with regard to the nature of the lines found on the surface of the Diatomaceæ. Thirdly, on the question of the vegetable or animal nature of the Diatomaceæ. From the statement of Mr. Sollitt and Mr. Harrison, it appeared that the lenses which they had employed for the minuter markings were object-glasses of Nachet's manufacture, the one-sixteenth and the one-eighth of an inch focal distance, with angles of aperture of 115° and 105° diameter, and for the larger markings one-fourth of Smith's, with an aperture of 46°. With these glasses they had detected markings whose interspaces numbered 130,000 to the inch. Mr. Sollitt regarded the lines as consisting of rows of minute tubercles, which gave the appearance of continuous lines.—Dr. WALKER-ARNOTT considered that these curious beings must now be regarded as plants.—Prof. ALLMAN looked upon them as the starting-point of nature in which the mineral, animal, and vegetable laws of creation were struggling for ascendancy.—Mr. SOLLITT and Mr. HARRISON regarded them as animals, and quoted the opinion of Prof. Bailey of New York.—Prof. BALFOUR referred to their resemblance to Desmideæ, and the conjugation observed amongst them as conclusive proofs of their relation to the Confervæ, whose vegetable nature no one doubted.—Dr. LANKESTER referred to Schleiden's objection, of their possessing a highly complicated structure, and pointed out their resemblance to the Foraminifera which all agreed to be animals. It had, however, been asserted that the Diatomaceæ possessed starch, and as yet this had not been discovered as a secreted product in beings recognized as truly animals, whilst starch was universally present in true vegetable productions.

'On the Structure of Bursaria, a Genus of Infusorial Animalcules,' by Prof. ALLMAN.

'On the Nature of Ciliary Motion,' by P. DUNCAN.—The author detailed what had been done by English observers on this subject, and came to the conclusion that the cause of the bending and returning of the cilium resided in the cell-wall of the cell which sustains the cilia, and that to a greater or less extent the whole of the cell-wall is contractile.

Prof. ALLMAN and Dr. REDFERN observed that the view taken by the author was undoubtedly correct and had been recently fully developed by Continental physiologists.

'On a Species of Priapulus, a Genus of Echinoderms belonging to the Family Sipunculidæ,' by Prof. J. PHILLIPS.—This genus was but little known to British naturalists, and from the descriptions he was inclined to doubt if the present species, which was taken off the coast of Scarborough, was identical with that described by Prof. E. Forbes in his work on British Starfishes.

'On the Structure of the Freshwater Polyp, *Hydra viridis*,' by Prof. ALLMAN.—It had been stated by Ecker and Kölliker that these creatures possessed no cells, but were composed of a mass of granules between which occasional vacuolæ occurred. He had succeeded in observing that the whole of the structure of the Hydra was cellular, and no exception to the general law that regulated the existence of organic beings.

Dr. LANKESTER exhibited a series of drawings of the British Freshwater Polyps, executed by Prof. Allman, which he stated were intended to illustrate a work on this subject to be published by the Ray Society. Among these were several new species, and he especially called attention to one of these, which seemed to be an exception to the general law that the polypidom of the polyp-bearing animals is fixed. In this case the polyp stalk possessed the power of moving, as well as each individual member of the mass.

THURSDAY.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

President—Dr. R. G. LATHAM.
Vice-Presidents—Capt. Sir J. C. Ross, Right Hon. Lord LONDESBOROUGH, Dr. J. CONOLLY, Col. CHESNEY.
Secretaries—R. CULL, Dr. N. SHAW, Rev. H. W. KEMP.
Committee—Sir C. Anderson, Rev. W. Arthur, Dr. Bulst, J. Calvert, Dr. W. Camps, H. M. Chadwick, A. G. Findlay, F. Hindmarsh, Dr. Hodgkin, J. Hogg, B. Jacobs, Judge Kennedy, Dr. J. Lee, Sir B. Outram, A. St. Ledger, Dr. Sandwith, W. D. Saull, W. Spence, G. Thornton, F. Tuckett, J. A. Warre, T. Wright.

'On Iceland, its Inhabitants, and Language,' by J. HOGG.—History, the writer remarked, gave them little information with respect to this country. Nothing was known till the ninth century of the Christian era, when the Norwegians settled there, and continued in possession till about 1350, when it sought protection from the Danish kingdom, under which country it had ever since been governed. Iceland and Ireland bore a particular resemblance to each other, and the lecturer proceeded to explain their similarity by various illustrations. There were in Iceland as in Ireland great bogs and marshes; but in respect to the population what a difference prevailed. In Iceland there were only 48,000 inhabitants, while in Ireland, which had been depopulated by emigration and other causes, at least 20 per cent., there were little fewer than 6,500,000 inhabitants. In Skaulholt, the capital of the former, too, there were only 500 poulation, while Dublin, the capital of the latter, numbered no less than 258,000 souls. Mr. Hogg then entered into a lucid description of the climate of the country, which was very severe, often 16 deg. below zero. Their light was chiefly derived from the Aurora Borealis. The burning mountain of Hecla, and the Geyser springs of boiling water, were deserving of mention as peculiarities. The manners of the inhabitants were next touched on. He described them as being warm-hearted to strangers, but extremely idle. They chiefly subsisted on fish, which they salted, and which was

their principal employment. The lecturer dwelt on the merits and defects of their language, which he described as a mixture of the Norwegian and Danish dialects.

'On the Production of Gold in the British Islands,' by J. Calvert.—From his own exploration, from researches in various works, and from communications, Mr. Calvert stated that gold was found in forty counties in these islands, and over an area of 50,000 square miles. He thus classified the gold regions:—The West of England, North Welsh, Mid-England, Northumbrian, Lowland, Highland, Ulster, and Leinster. The West of England region might be divided into three districts—Cornwall, Dartmoor and Exmouth, or West Somerset. In Cornwall, the tin-streams, which were of the same composition as gold diggings, had long been known to contain nuggets and coarse dust, or hops of gold, but had only been slightly worked by Sir Christopher Hawkins, at Ladoch. The largest Cornish nugget was not worth more than about ten guineas. The Cornish districts were very rich in gold. The Dartmoor district contained gold in its northern and southern streams. A miner, named Wellington, got about 40*l.* worth of gold, at Sheepston, and Mr. Calvert had obtained gold from the granite by this process. In the West Somerset were four companies for working gold ores. From 55 tons of Poltimore ores, 102 ounces of gold were lately reduced, being at the rate of 16 dwts. per ton, or twice the rate of the St. John del Rey ores. The West Somerset district probably embraced gold sites at Combe Martin and the Mendips. The North Wales district might embrace all the western counties of the principality. There were no reported river deposits, but gold ores had been worked at Carnhusian, Isso, Berthllwyd, Dolfrwynos, and other places. The Northumbrian regions embraced Alstone Moor; but the chief known gold-field was in Westmoreland and Cumberland. In the Goldscoop mine gold had been found in the copper for ages, and he (Mr. Calvert) had discovered it in many of the ores and rivers of the district. He showed specimens from High Treby, Caldbeck Fells, the Buttermere and Crumwick-road, Borrowdale, Buttermere, Bassenthwaite, and a fine lump of gold gossan, which weighed originally 57 oz. The South of Scotland district had only been worked for its river deposits in Clydesdale and Nithsdale, but in his (the lecturer's) opinion it extended throughout the lowlands. Gold was found in above forty brooks or gullies, and all of the miners have gold for sale, obtained in their holiday excursions. Mr. Calvert mentioned that in the manuscripts of Queen Elizabeth's time the diggers relied on keele, a reddish earth, as an indication of gold, and the miners do now. He had seen it also in Westmoreland, and had recognized it also in Australia and elsewhere. He found gold in the Lowther Burn, Long and Short Cleuch Burns, Mannock Water, Kepple Burn, Glengomar, Elvanwater, Goldscour, and other places. At Wanlockhead he saw gold in the midst of the town. At one place the miners, two years ago, got gold, which at Glasgow they sold for 42*l.* Gold was reported in Perthshire, Fifeshire, Stirlingshire, and Linlithgowshire. The Highland gold regions were unexamined. Gold localities had been reported in Aberdeenshire and Sutherlandshire. The Wicklow diggings were only shortly referred to. It appeared, by returns obtained from the Dublin goldsmiths, that the present supply of the peasantry was about 2,000*l.* a year. In Ulster the peasantry work the aura or gold mountains in Antrimshire, and the Mayola streams in Londonderry yielded gold. The yearly produce of gold in these islands was now about 5,000*l.* a year, which might be largely increased. The number of gold bearing streams known was one hundred. Gold had been found in nearly all the clay-slate districts. Many of these were worked in the Middle Ages, and probably also by the Romans. Gold, in ores, was found associated with silver, lead, copper, iron, and zinc; with quartz, granite, slate, oxide of iron, sulphate of iron. These ores have only been worked of late in Devonshire and Merionethshire. The river deposits were rudely worked by the miners or peasantry in Wicklow, Lanarkshire, Antrimshire, and Devonshire. The washing of gold-stuff in our home districts was very rude, and not equal to that in Australia, nor had there been for a long time any deep workings. Many rich gold ores were thrown away, and much metal was produced from which the gold was not refined. The only two gold-fields which had yet been worked had yielded considerable amounts. The Lanarkshire district from a quarter of a million to half a million, the Wicklow above 100,000*l.* The largest known nuggets were 3 lb. from Lanarkshire, and others of 2¼ lb. from there and Wicklow. The importance of attending to this branch of the national resources was strongly urged. Mr. Calvert concluded by stating that he considered the clay-slate formations of Canada would soon be discovered to be a vast gold-field.

'On Oceanic Currents of the Atlantic and Pacific,' by A. G. Findlay.—This paper was illustrated by some large and effective diagrams. This important subject has received, it will be seen, a larger share of attention than is usual at the British Association, for in addition to Mr. Findlay, Dr. Scoresby and Dr. Buist, of Bombay, have given excellent memoirs on the same topic.—The great importance of an intimate knowledge of the condition of the ocean to the advancement of meteorological science was demonstrated from the fact, that the proportion of water to land on the surface of the globe was not less than 391 to 100, or nearly 4 to 1,—and that it was in the open ocean only that the phenomena of the atmosphere are exhibited much nearer their normal condition. Yet in the inquiries into this branch of physics, we have had but few votaries,—and it was thought that the American hydrographic bureau had not, as yet, added much to the conclusions of Rennell and others. The features of the North Atlantic currents, though best known, were still imperfectly so,—as we know nothing of what is going on beneath the surface, as was shown by a diagram. The character of the Gulf-stream, the chief current of the Atlantic, its bifurcation, and the wall of warm and cold waters in juxtaposition on its north-west side were explained; and the course of this mighty tropical stream was traced across the northern portion of the ocean, and shown to cause the great contrast between the climate of Ireland and the British Isles, and that of Labrador in the same latitude. Iceland, too, was shown to be made habitable by its influence, as evidenced by the observations of Capt. Irminger, of the Danish Navy; and its effects were traced to the shores of Norway and the Polar Basin. The Arctic current, the temporary Rennell's current, and the North African current were described; and the easterly stream was traced beyond the Azores, and thence south and west into the great westerly equatorial current, which, re-entering the Caribbean Sea, thus completes the circuit of the North Atlantic, around the Sargassa (or weedy) sea, on the parallel of 30° north. In the South Atlantic, a somewhat similar process is going on. The Agulhas current from the Indian Ocean passes round the Cape of Good Hope, thence up north along the west coast of Africa to the equator; thence forming the initial impulse to the south portion of the equatorial current, which, dividing at Cape San Roque, on the Brazil side, is diverted to the south, and thence flowing eastward between latitudes 34° and 40° south, is called the southern connecting current, which, uniting with the northerly Antarctic drift, completes the circuit of the South Atlantic, on the parallel of 30° south. In the Pacific, also, an analogous arrangement exists; and very numerous authorities were quoted which would place the hydrology of the Pacific on a new basis. The Antarctic drift current, running northward and eastward up to latitude 35° south, strikes the west coast of South America, which it thence ascends to the northward, and is named the Peruvian or Humboldt's current; and another branch passing to the south and around Cape Horn. The Peruvian current reaches the equator, and then bears off to the west, and is thence called the south equatorial current. This immense drift passes entirely across the ocean, and finally circulates around the space between Australia and New Zealand. The north equatorial current between 10° and 26° north also sets across the ocean to the westward, and arriving at the Japan Islands, it runs so strongly up to the north and north-east that it forms here a Gulf-stream of the Pacific, which was here named the Japanese current, and was traced quite across the ocean from west to east, and thence southward down the North American coast, re-entering the equatorial stream; which thus completes the circulation of the waters around the parallel of 30° north as an axis. Between these systems of circulation, a current not hitherto suspected was eliminated, and was named the equatorial counter current. It flows from west to east in the Pacific, between the latitudes of 4° or 5° and 10° north across the entire breadth of the ocean towards the Bay of Panama. This singular and important current was considered to be the effect of the trade winds and the zone of calms which exists on this parallel; the whole current systems themselves being mainly owing to the action of the trade and passage winds. In the Atlantic, this counter-current has been long known as the Guinea current, from the waters in each ocean being impelled to leeward or to their western sides, it might be supposed that the level of the Atlantic side of the Isthmus of Panama would be several feet higher than the Pacific, but that it is of the same level is owing to the compensation afforded by this counter-current. It was urged that a systematic series of observations of ocean phenomena should be forthwith collected, as our ignorance—of those of the Indian and Pacific Oceans especially—was very great; and apart from the advantages which would accrue to science, in a practical sense it was most important. This was made apparent by the fact that a ship taking a wrong, but apparently direct course, from Shanghai, in China, to Panama, might be required to sail a distance at least equal to 11,000 miles, while a proper course would not exceed 7,300 miles,—a difference not slow to be appreciated in this commercial age. In another sense, ocean currents have an important bearing in their action on climate:—and the sea-island cotton of the United States was instanced. This product owes its excellence to the warm Gulf-stream passing to the north-east in their offing; the trade wind bearing the saline evaporation over the sea islands, and causing the excellence of the staple. A similar climate might be looked for on the north-east coast of Australia, where the ocean is probably warmer than the land, and would have the same advantages for the growth of cotton.

After some complimentary remarks from the Chairman, Mr. Sault said that it was a most important subject which required fuller investigation, as the causes of currents, he thought, were involved in some obscurity, and that we might look to the same origin as that of the trade winds for their source, and also to the action of heat; but this was at present so involved with other matters that we could not separate what was due to each cause. — Mr. H. M. Chadwick said that Mr. Findlay's views were entirely borne out by the observations of Mr. Wheelwright and other American officers.—Mr. Saunders offered some observations on the importance of meteorological science, and highly complimented Mr. Findlay for his admirable productions.

'On the Manners and Customs of the Jakutes,' by Prince Emanuel Galitzin.

Section F.—Statistics.

President—J. Heywood.
Vice-Presidents—T. Tooke, F.G.P. Neison.
Secretaries—W. Newmarch, E. Cheshire.
Committee—W. S. Ayrton, E. Barrington, F. Bennock, C. H. Bracebridge, H. S. Bright, E. F. Collins, Dr. H. Cooper, Lord Hotham, R. T. Jopling, Dr. Lee, J. Locke, Prof. Moffatt, R. Munroe, W. Neild, T. W. Rathbone, The Rev. J. Selkirk, W. Spence, J. A. Tinné, J. B. Yates.

'Statistics of the Produce of the Northern Whale Fisheries from 1772 to 1852,' by H. Munroe.

'On Decimal Coinage,' by T. W. Rathbone.

'The Results of the Census of Great Britain in 1851, with a Description of the Machinery and Processes employed to obtain the Returns,' by E. Cheshire.—The author commenced by reciting the onerous duties of the Registrar General. The objects of the census were explained, and the machinery employed to take it. Great Britain was apportioned into 38,740 enumeration districts, and to each of them a duly qualified enumerator was appointed. The author illustrated the extent of

this army of enumerators, and the labour of engaging their services on the same day, by stating that it would take 13½ hours to count them, at the rate of one a second, and that the army recently encamped at Chobham would not have sufficed to enumerate a *fourth* of the population of Great Britain. The boundaries of the enumeration districts, and the duties of the enumerators, were defined. The number of householders' schedules forwarded from the Census Office was 7,000,000, weighing 40 tons. The processes employed to enumerate persons sleeping in barns, tents, and the open air, and in vessels, were severally explained; also the means by which the numbers of British subjects in foreign States were obtained. The precautions taken to secure accurate returns were recited; they involved the final process of a minute examination and totaling, at the Census Office, of 20 millions of entries, contained on upwards of 1¼ millions of pages of the enumerators' books. The latter were upwards of 38,000 in number. The boundaries of the fourteen registration divisions were traced, and the plan of publication of the census was explained. The number of persons absent from Great Britain on the night of the 30th of March, 1851, was nearly 200,000:—viz. army, navy, and merchant service, 162,490; and British subjects resident and travelling in foreign countries, 33,775. The various causes of displacements of the population were recited; and the general movement of the population on the occasion of the Great Exhibition was alluded to.† The number of *visits* to the Crystal Palace were 6,039,195,—and the number of *people* who visited it was 2,000,000; nevertheless, the landing of only 65,233 aliens was reported in the year. The population of Great Britain in 1851 is subjoined.—

	Males.	Females.	Total.
England	8,281,734	8,640,154	16,921,888
Scotland	1,375,479	1,313,263	2,688,742
Wales	499,491	506,230	1,005,721
Islands	66,854	76,272	143,126
Army, Navy, and Merchant Service	162,490	....	162,490
Total	10,386,048	10,735,919	21,121,967

—The census illustrated this 21,000,000 of people by an allusion to the Great Exhibition. On one or two occasions 100,000 persons visited the Crystal Palace in a single day, consequently 211 days of such a living stream would represent the number of the British population. Another way of realizing 21,000,000 of people was arrived at by considering their numbers in relation to space: allowing a square yard to each person they would cover 7 *square miles*. The author supplied a further illustration, by stating that if all the people of Great Britain had to pass through London in procession 4 abreast, and every facility was afforded for their free and uninterrupted passage for 12 hours daily, Sundays excepted, it would take nearly 3 *months* for the whole population of Great Britain to file through at *quick* march, *four* deep. The excess of females in Great Britain was 512,361, or as many as would have filled the Crystal Palace 5 times over. The proportion between the sexes was 100 males to 105 females, a remarkable fact when it was considered that the births during the last 13 years had given the reversed proportion of 105 *boys* to 100 *girls*. The annexed statement exhibits the population of Great Britain at each census from 1801 to 1851 inclusive:—

Years.	Males.	Females.	Total.
1801	5,368,703	5,548,730	10,917,433
1811	6,111,261	6,312,859	12,424,120
1821	7,096,053	7,306,590	14,402,643
1831	8,133,446	8,430,692	16,564,138
1841	9,232,418	9,581,368	18,813,786
1851	10,386,048	10,735,919	21,121,967

—The increase of population in the last half century was upwards of 10,000,000, and nearly equalled the increase in all preceding ages, notwithstanding that millions had emigrated in the interval. The increase still continued, but the *rate* of increase had declined, chiefly from accelerated emigration. At the rate of increase prevailing from 1801 to 1851, the population would double itself in 52½ years. The relation of population to mean lifetime and to interval between generations was then discussed. The effects of fertile marriages and of early marriages, respectively, were stated; also the result of a change in the social condition of unmarried women; likewise, the effect of migration and emigration, respectively, on population; the effect of an abundance of the necessaries of life was indicated, and, on the contrary, the result of famines, pestilences, and public calamities. The terms "family" and "occupier" were defined, and some remarks by Dr. Carus, on English dwellings, were cited. The English (says the Doctor) divide their edifices *perpendicularly* in houses, while on the Continent and in many parts of Scotland the edifices are divided *horizontally* into floors. The definition of a "house," adopted for the purposes of the census, was "isolated dwellings or dwellings separated by party walls." The following table gives the number of houses in Great Britain in 1851.—

	Inhabited.	Uninhabited.	Building.
England	3,076,620	144,499	25,192
Scotland..	370,308	12,146	2,420
Wales	201,419	8,995	1,379
Islands	21,845	1,095	203
Total	3,670,192	166,735	29,194

—About 4 per cent. of the houses in Great Britain were unoccupied in 1851, and to every 131 houses inhabited or uninhabited there was *one* in course of erection. In England and Wales the number of persons to a house was 5·5; in Scotland 7·8, or about the same as in London; in Edinburgh and Glasgow the numbers were respectively 20·6 and 27·5. Subjoined is a statement of the number of inhabited houses and families in Great Britain at each census, from 1801 to 1851,—also of persons to a house, excluding the islands in the British seas.—

Years.	Inhabited Houses.	Families.	Persons to a House.
1801	1,870,476	2,260,802	5·6
1811	2,101,597	2,544,215	5·7
1821	2,429,630	2,941,383	5·8
1831	2,850,937	3,414,175	5·7
1841	3,446,797	(No returns.)	5·4
1851	3,648,347	4,312,388	5·7

—The number of inhabited houses had nearly doubled in the last half century, and upwards of two million new families had been founded. 67,609 families, taken at hazard, were analyzed into their constituent parts, and they gave some curious results. About 5 per cent. only of the families in Great Britain consisted of husband, wife, children, and servants, generally considered the requisites of domestic felicity; while 893 families had each *ten* children at home, 317 had each *eleven*, and 64 had each *twelve*. The number of each class of institution, and the number of persons inhabiting them, are annexed.—

Class of Institution.	Number of Institutions.	Number of Persons Inhabiting them.		
		Males.	Females.	Total.
Barracks	174	44,833	9,100	53,933
Workhouses	746	65,786	65,796	131,582
Prisons	257	24,593	6,369	30,959
Lunatic Asylums..	149	9,753	11,251	21,004
Hospitals	118	5,893	5,754	11,647
Asylums, &c. ..	573	27,183	19,548	46,731
Total	2,017	178,041	117,815	295,856

—Of these 295,856 persons, 260,340 were inmates, and 35,516 officers and servants. The excess of males in the prisons arose from the fact that crime was four times as prevalent among males as among females. The number of the houseless classes, *i. e.* of persons sleeping in barns, tents, and the open air, on the night of the census, was 18,249. The following table gives the number of these classes, together with those sleeping in barges and vessels.—

Persons sleeping in	Males.	Females.	Total.
Barges	10,395	2,529	12,924
Barns	7,251	2,721	9,972
Tents or Open Air	4,614	3,663	8,277
Vessels	48,895	2,853	51,748
Total	71,155	11,766	82,921

—It was mentioned as a curious trait of gipsy feeling that a whole tribe struck their tents, and passed into another parish in order to escape enumeration. The composition of a town was next described; also, the laws of operating upon the location of families. The number of cities and towns of various magnitudes in Great Britain was 815:—viz. 580 in England and Wales, 225 in Scotland, and 10 in the Channel Islands. The town and country population was equally balanced:—10¼ millions against 10¼ millions. The density in the towns was 3,337 persons to the square mile; in the country only 120. The average population of each town in England and Wales was 15,500; of each town in Scotland 6,654. The average ground area of the English town was 4½ miles. The manner in which the ground area in Great Britain was occupied by the population was illustrated by a series of squares. The adventitious character of certain towns was alluded to; many had risen rapidly from villages to cities, and had almost acquired a metropolitan character. In 1851, Great Britain contained 70 towns, of 20,000 inhabitants and upwards. There was an increasing tendency of the people to concentrate themselves in masses. London extended over an area of 78,029 acres, or 122 square miles, and the number of its inhabitants, rapidly increasing, was 2,362,236 on the day of the last census. The author illustrated this number by a curious calculation:—a conception of this vast mass of people might be formed by the fact, that if the metropolis was surrounded by a wall, having a north gate, a south gate, an east gate, and a west gate, and each of the four gates was of sufficient width to allow a column of persons to pass out freely *four* abreast, and a peremptory necessity required the immediate evacuation of the city, it could not be accomplished under *four-and-twenty* hours, by the expiration of which time the head of each of the four columns would have advanced a no less distance than *seventy-five miles* from their respective gates, all the people being in *close* file, *four* deep. In respect to the density or proximity of the population, a French writer had suggested the term "specific population," after the analogy of "specific gravity," in lieu of the terms in common use, "thinly populated" and "populous." The statement annexed exhibits the area of Great Britain in acres and square miles, the square in miles, the number of acres to a person, of persons to a square mile, and the mean proximity of the population on the hypothesis of an equal distribution.—

	Area		Square (in miles.)	Acres to a Person.	Persons to a sq. mile.	Proximity of Persons in yards.
	In acres.	In sq. miles				
England	32,590,429	50,922	226	1·9	332	104
Scotland....	20,047,462	31,32:	177	6·9	92	197
Wales	4,734,486	7,398	86	4·7	135	162
Islands	252,000	394	20	1·8	363	99
GreatBritain	57,624,377	90,038	299	2·7	233	124

—The 624 districts of England and Wales classed in an order of density ranged from 18 persons to the square mile in Northumberland, to 185,751 in the East London district. In all London there were 19,375 persons to the square mile. In 1801 the people of England were on an average 153 yards asunder, in 1851 only 108 yards. The mean distance between their houses in 1801 was 362 yards, in 1851 only 252 yards. In London the mean proximity in 1801 was 21 yards, in 1851 only 14 yards. The number of islands in the British group were stated at 500, but inhabitants were only found on 175 on the day of the census. The early history of the more celebrated of the islands was given. The population of the chief of the group, Great Britain, had been given. Ireland contained 6,553,357 inhabitants; Anglesey, the next most populous island, had 57,318 inhabitants; Jersey, 57,020; the Isle of Man, 52,344; the Isle of Wight, 50,324; Guernsey, 29,757; eight islands ranged from 22,918 to 5,857, 17 from 4,006 to 1,064, 52 from 947 to 105, and the remaining 92, downwards to an island inhabited by one solitary man. The shires, hundreds, and tythings, were traced to Alfred the

† It is stated incidentally in the census, that in 1845 a million and a half of people on the Continent visited in pilgrimage, the *Holy Coat* at Trèves.

Great; the circuits to Henry the Second. The terms "hundreds" and "tythings" had their origin in a system of numeration. The number of reformed boroughs in England and Wales were 196, and contained a population of 4,345,269 inhabitants. Scotland contained 83 royal and municipal burghs, having a population of 752,777 inhabitants. The difficulty of tracing the boundaries of the *ecclesiastical* districts, and consequently of ascertaining correctly their population, was shown. The changes in the ancient boundaries of counties and other divisions were alluded to, and the paper concluded with a general summary of the results of the census. An appendix contained tables, showing the population and number of houses, distinguishing whether inhabited, uninhabited, or building, in England, Scotland, Wales, and the Islands, respectively, at each census from 1801 to 1851; the same, in 1851, for each of the 14 registration divisions; for each of the 36 districts of London; and for each county in England and Wales, and in Scotland; also the population of each county in England and Wales, and in Scotland, at each census from 1801 to 1851, and the increase of population in the last half century; the area in acres and square miles, the number of persons to a sqnare mile, of acres to a person, of inhabited houses to a square mile, and of persons to a house, for each county in England and Wales, and in Scotland; the population and number of inhabited houses in the counties, and parliamentary divisions of counties, in England and Wales, and in the counties of Scotland, including and excluding represented cities and boroughs or burghs, also the number of members returned; the population of each island containing above 100 persons; the population and number of inhabited houses in *each* of the 815 cities, boroughs, and principal towns in England and Wales and in Scotland, distinguishing the municipal and parliamentary limits; the number of each class of public institutions in England and Wales, Scotland, and the Islands, and the number of persons inhabiting them; the number of births and deaths, and the excess of births over deaths, in England and Wales, for each of the ten years of 1841—50; and finally, the number of persons who had emigrated from Great Britain and Ireland in each year from 1843 to 1852 inclusive, and the destination of the emigrants. The author concluded by stating that the paper would be immediately printed.

'Electoral Statistics of the United Kingdom,' by J. Edwards.

Section G.—MECHANICAL SCIENCE.

President—W. Fairbairn.
Vice-Presidents—Prof. Hodgkinson, G. Rennie, J. Walker.
Secretaries—J. Oldham, J. Thomson, W. S. Ward.
Committee—J. F. Bateman, W. Crosskill, sen., A. Liddell, G. Locking, J. Nasmyth, R. Roberts, C. B. Robinson, B. Samuelson, Rev. Dr. Scoresby, T. Thompson.

'Introductory Address on General Improvements in Mechanical Science during the past year,' by W. Fairbairn.—The first subject noticed by Mr. Fairbairn was Ericsson's Caloric Engine, from which so much had been expected. It was constructed, he said, on the same principle as the air engine of Dr. Stirling, invented ten years ago:—the chief difference being, that the air in Ericsson's engine is passed through wire gauze to take up the heat, instead of through plates of iron. The great objection to the engine appeared to be that two-thirds of the power were wasted in passing the air through the gauze; and though it might be premature to pronounce an opinion before the results of the improvements lately effected were known, yet if so much of the power was required for taking up the heat, Mr. Fairbairn could not but think it must prove a wasteful expenditure of fuel.—The improvements that during the last year had been made in the application of the screw propeller were opening a new era in the history of our war and mercantile navy, of which the recent review at Spithead might be considered an indication. We were now in a state of transition between the paddle and the screw, and he had no doubt that in the progress of time great improvements would be made in the construction of the engines, and in their applicability to the work, which would materially economize space and power in our steam vessels.—Mr. Fairbairn next alluded to the construction of an immense steam vessel, which had been undertaken by Mr. Brunel and Mr. Scott Russell, of such vast dimensions that it would stretch over two of the largest waves of the Atlantic, and would thus obtain a steadiness of motion which would be a preventive against seasickness. This mammoth steamer is to be 680 feet long, with a breadth of beam of 83 feet, and a depth of 58 feet. The combined power of the engines would be that of 2,600 horses. The ship is to be built of iron, with a double bottom of cellular construction, reaching six feet above the waterline, and with a double deck, the upper and the lower parts being connected together on the principle of the Britannia tubular bridge, so that the ship will be a complete beam. It would thus possess the strength of that form of construction, and not be liable to "hogg," or break its back as had been the case with other ships of great length. The double bottom would be a means of increased safety in other ways, for if by any accident the outer shell were broken, the inner one would prove effectual to keep out the water. As an additional security, however, it was divided into ten watertight compartments. The ship would be propelled by paddles and by a screw, which would be worked by separate sets of engines, so that if any accident occurred to the machinery of one, the other would be in reserve. He said he had no doubt that if properly constructed this ship would answer the expectations entertained of its capabilities and strength, and that it would form, when completed, the most extensive work of naval architecture that had ever been constructed.—The next subject to which Mr. Fairbairn adverted was the improvements making in the locomotive department of railways, particularly to an engine constructed for the southern division of the North-Western Railway, from the designs of Mr. M'Connell, which was the most powerful locomotive that had yet been made for the narrow gauge. The peculiarity of construction consisted in the great length given to the fire-box, in which the greatest amount of steam is always generated, and in the comparative shortness of the tubes, which were only half the usual length. The steam generated by this boiler was sufficient for any engine of 700 horse power. The engine was intended for an express train that would complete the distance from London to Birmingham in two hours. In manufacturing machinery there had also been great activity and progress during the past year; and it was gratifying, Mr. Fairbairn observed, to find accompanying this improvement in machinery a most prosperous condition in the working classes engaged in those manufactures—a prosperity which had never been equalled within his experience. He attributed this prosperous state of things to the combined operations of improvements in machinery and the removal of commercial restrictions. The improvement which he more especially noticed was that of a new combing machine of French invention applicable alike to cotton, to flax, and to wool. It combs the fibre instead of carding it, a number of small combs being applied in succession to the cotton or flax, by which means a much finer yarn can be produced from the same material than is possible by the former processes. As evidence of the present activity and enterprise in manufacturing industry, Mr. Fairbairn mentioned the erection of a mammoth alpaca woollen manufactory, by Mr. Salt, of Saltaire, near Bradford, which was 550 feet long, 50 feet wide, and six stories high, besides offices, warehouses, and various other buildings connected with it. Their steam engines to drive the machinery would be equal to 1,200 horse power, and the factory would employ upwards of 3,000 hands. The cost of the whole would be upwards of 300,000*l.*, and the enterprise was that of a single individual. Mr. Fairbairn concluded his *résumé* of manufacturing progress by noticing the improvements introduced by Prof. Crace Calvert, of Manchester, in the process of smelting iron by previously removing the sulphureous vapour from coal and coke. The results had proved most satisfactory, the strength of the iron produced by this process being about 40 per cent. greater than that made in the ordinary way.

'Report of the Committee appointed in 1852 to prepare a Memorial to the Hon. East India Company on the Means of Cooling Air in Tropical Climates,' by W. J. Macquorn Rankine.—In the absence of Mr. Rankine, one of the Secretaries read the Report, which was founded on experiments with apparatus invented by Prof. Smyth, described by him at a previous meeting of the Association. The principle of the invention consists in cooling the air by expansion. The air at the temperature of the atmosphere is first compressed in a bell receiver, and the heat generated by this compression is lowered by passing the air through a number of tubes immersed in water, by which means it acquires in its compressed state the normal temperature of the atmosphere—say 90° of Fahrenheit. The air then passes into another inverted bell receiver, where it is expanded to the ordinary pressure of the atmosphere, and during this expansion it absorbs so much heat that the temperature is reduced to 60°. It is then admitted into the room to be ventilated. The compression of the air during the experiments in the first cylinder was equal to $3\frac{3}{10}$ inches of mercury per square inch above the pressure of the atmosphere, and the refrigerator exposed a cooling surface of 1,100 square feet, which was considered sufficient to reduce the temperature of the air in passing through the tubes to that of the atmosphere, viz. 90°. The Report stated that by means of this apparatus, 66,000 cubic feet of air per hour might be cooled from 90° to 60°, by a steam-engine of one-horse power, which is required to raise and depress the bell receiver. The advantage of cooling the air by mechanical means instead of by evaporation was stated to be, the avoidance of aqueous vapour with which the air is injuriously charged by the evaporating process.

'On Reaping Machinery,' by A. Crosskill.—Mr. Crosskill gave an historical account of the invention of reaping machines, from their use by the Romans and Gauls to the present time; with a view to show that though reaping machines had not been brought prominently to notice before the Great Exhibition, such implements had long since been invented, and that the reaping machines of Messrs. M'Cormack and Hussey were constructed on the same principles as those which had been previously made in this country. Among other English inventions of reaping machines, he mentioned one by Mr. Smith of Deanston, in 1812, which from time to time underwent improvements, and in 1835 it worked very successfully at the meeting of the Highland Agricultural Society. After that trial it was laid aside, as British farmers did not encourage, and, during the redundance of labour, did not want such machines. In 1822, Mr. Ogle, of Remington, near Alnwick, invented a reaping machine, which appears to have served as a model for Mr. M'Cormack, as his machine is in almost every particular the same as Mr. Ogle's,—a description of which was published in 1826. The same circumstances which prevented the adoption of Mr. Smith's reaping machine also caused Mr. Ogle's to be laid aside; though in America, where labour is scarce and the stalk of the corn more slender and dry, and therefore better adapted for the action of mechanical cutters, M'Cormack's reaper was soon in extensive demand. It was stated by Mr. Crosskill that about 2,000 of M'Cormack's machines are annually sold in the United States, and that Hussey's is in nearly equal request in that country. The celebrity acquired by those machines in the Great Exhibition induced Mr. Bell, of Scotland, who had gained a prize in 1829 from the Highland Agricultural Society for a reaping machine, to bring his invention again into the field. In 1852 he contested with Mr. Hussey at the meeting of the Highland Society at Perth, and carried away the prize; and his reaping machine had proved victorious on several subsequent trials. It was to this invention that Mr. Crosskill particularly directed the attention of the Section. It differs in several essential points from those of M'Cormack and Hussey. In the first place, the machine is propelled before the horses, which are harnessed to a pole in the centre of the machine, and not on one side; in the next place, the cutters act like large double-edged scissors, which clip the

corn as the machine is propelled into it; and a further advantage is, that it gathers the corn after it is cut without requiring a man to rake it off,—which is necessary in the two other machines. The arrangement of the self-acting gatherer consists of an endless band of canvas, on to which the corn falls as it is cut, and it is then thrown on one side by a continuous motion of the canvas as the machine advances. With this machine, Mr. Crosskill stated, one acre and a half of corn per hour may be cut with two horses and one man to drive them.

In the discussion which ensued, Mr. Samuelson, the maker of M'Cormack's machines, admitted that Bell's reapers cut the corn better than M'Cormack's,—and that the saving of the hard work required from a man in gathering the corn was an important advantage; but the draught of M'Cormack's machines, he said, is lighter, and they are less costly.—It was stated, that the cost of Mr. Bell's reaper is double that of Mr. M'Cormack's or Mr. Hussey's, the one being 40*l.* the other 20*l.*—Mr. Crosskill stated, in reply to questions respecting the difficulties encountered in the use of reaping machines when the corn is laid, that there is no difficulty in cutting and gathering laid corn, if the machines meet it inclined towards them, so that it may fall on the gathering board as it is cut.—Models of the three machines were exhibited.

FRIDAY.

'The Rise, Progress, and Present Position of Steam Navigation in Hull,' by J. Oldham.—In this paper Mr. Oldham took a retrospective survey of the application of steam power to the propulsion of ships, with a view to prove that Hull has taken a prominent part in the introduction and improvement of the invention. In 1787, experiments were made in Hull, by Messrs. Furnace & Ashton, which resulted in the construction of a steamboat worked with paddles, that attracted the attention of the Prince Regent, by whom the boat was purchased,—but it was soon afterwards maliciously burnt. In 1814, the first steamboat on the Humber was established to run from Hull to Gainsborough. It was called the Caledonia, and it accomplished, under favourable circumstances of the tide, fourteen miles an hour. The first sea-going steamboat sent from Hull was in 1821; and it was supposed to be the first steamboat that plied on the east coast of England. The sea-going steamers that are now connected with the port of Hull have an aggregate tonnage of 9,139, and 2,749 horse-power. The tonnage of the river-boats is 2,218, with 1,135 horse-power. The other steamboats coming to Hull have a burthen of 5,909 tons, and 2,236 horse-power. There are altogether 80 steamboats trading with Hull, of which number 15 are propelled by the screw.

A discussion arose on the respective merits of the inventors of steam navigation, and the priority of their inventions; in which discussion Mr. Fairbairn, Mr. Bayley, and Mr. Thompson took part.—Mr. Fairbairn said, he saw the Caledonia enter South Shields, and that it was the first steamboat in the North after Henry Bell's on the Clyde. Bell, it was stated, got the idea of his engine from Symington, and he made propositions to our Government, and to Napoleon during the temporary peace, for applying the principle to warships,—but the plan was rejected, as such a means of propelling ships was considered to be impracticable. In reference to Fulton's claim to be the original inventor of steam propulsion, Mr. Fairbairn said, that Fulton had most probably seen an account of Symington's experiments,—but there could be no doubt that he had the precedence in bringing out steamboats in 1807, and afterwards more successful in 1810, when his steamboat was at work on the Hudson.

'A brief Description of Locking & Cook's Rotatory Valve Engine, and its Advantages,' by G. Locking.—In this engine a metal disc, with three apertures, slowly rotating on a flat surface, with corresponding openings connected with the boiler and the cylinders, supplies the place of the ordinary slide valves. Rotary motion is given to the valve by a vertical shaft, on which there is a pinion that is worked by a cog-wheel on the shaft of the engine. The two bearing surfaces are ground steam-tight, and an outer casing serves to confine the steam, as in the common slide valve. The advantages said to be gained by this arrangement are the diminution of friction and a more ready means of cutting off the steam and of reversing the engine. As the rotary valve has a continuous slow motion, the inconvenience and friction occasioned by the rapid reciprocating action of the slide valve is avoided. Among other advantages of this contrivance it was stated that it costs less, is less liable to get out of order, and occupies less room. Mr. Cook, the inventor, is a working mechanic in Hull.

Mr. Fairbairn, Mr. Roberts, Mr. Hancock, and other gentlemen, expressed themselves favourably of the invention, and at the conclusion of the business the members of the Section paid a visit to Messrs. Locking & Cook's works, to inspect a steam-engine constructed on this principle in action.

'On a New Thermostat for regulating Temperature and Ventilation,' by W. Sykes Ward.—This apparatus consists of a series of flat circular hollow cases, about one foot in diameter and one inch deep, attached together in their centres. Each case contains a small quantity of sulphuric ether, which is readily affected by change of temperature. The cases, comprising about six, are suspended one under the other, and to the lowest one is attached a weight by a cord that passes over an excentric pulley. On an increase of temperature the ether expands, and the weight falls down, and it is drawn up again by the pressure of the atmosphere on the external discs of the cases when the air is cooled. By connecting the weight with the ventilators of a conservatory, or other building, the temperature can be thus regulated to any required degree by a previous adjustment of the apparatus.

'On a Compound Safety Valve,' and 'On an Improved Tubular Boiler,' by James Hopkinson.

MISCELLANEA

To the Winds.

Talk to my heart, O winds—
Talk to my heart to-night;
My spirit always finds
With you a new delight—
Finds always new delight,
In your silver talk at night.

Come up from your cold bed,
In the stilly twilight-sea,
For the dearest hope lies dead
That was ever dear to me;
Come up from your cold bed,
And we 'll talk about the dead.

Tell me, for oft you go,
Winds, lovely winds of night,
About the chambers low,
With sheets so dainty white,
If they sleep through all the night,
In the beds so chill and white?

Talk to me, winds, and say,
If in the grave be rest;
For, O, life's little day
Is a weary one at best;
Talk to my heart and say
If death will give me rest.

—*National Era, Washington, U.S.*

To Correspondents.—Bruce.—We cannot supply the information which our Correspondent asks.

The Library of Congress, at Washington.—The London Agency for this Library is in Covent Garden (Rich, Brothers),—not at Charing Cross, as we by mistake said in our Gossip of last week. It is the Agency for the Smithsonian Institute that is at Charing Cross (Mr. Steevens's).

W. W. H.—We are from time to time pestered by Correspondents with their corrections of our supposed mistakes,—and find generally that the coarseness of the tone assumed by them is in proportion to their want of intelligence or of information. For the most part we take no notice of such corrections where there is nothing to correct,—and if we now answer W. W. H. at all, it is for the reason which will appear at the close of our reply. A Correspondent who uses this signature, and whose manner is such as to bespeak anything rather than faith in his communications, proposes to us *three* corrections in one of our recent articles on 'The British Cabinet.' The first two are disposed of, for his private edification, as follows:—Lord Langdale was *not* classed by us amongst Lord Chancellors,—and the Stratheden barony *was* properly placed by us amongst law peerages, though conferred through a female creation.—From so loose and inapprehensive a reader we cannot venture to accept any fact. A man who blunders on two out of his three points, must be supposed wrong in his third till found to be right. But on the other matter to which he refers we will inquire for ourselves, and make the correction if necessary.

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"My child voided thread-worms by hundreds, the next morning.—Jane Greening."

"Dear Sir,—A worm nearly three yards long has been expelled from my child, five years old, by one dose of your medicine.—From Mrs. Broughton, Colchester."

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TO DR. BATCHELOUR has been communicated (from Abroad) one of the most astounding discoveries of our age. By an external application, without pain, Cancers, even in the last stage, are completely eradicated, White Swellings, Enlarged, Stiff, and Contracted Joints, Rheumatism, Tic Doloreux, Lumbago, Fistula, Piles, Corns, Spinal Complaints, and Neuralgic Pains are cured by MAJOR'S SYNOVITIC LOTION, as modified for the human subject by Dr. Batchelour, M.D., M.R.C.S.E., M.L.A.C.

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